X

NOTE

ON AN

INSPECTION OF THE FORESTS

IN THE

CENTRAL PROVINCES:

NOVEMBER 1885 TO FEBRUARY 1886.

BY

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B.—Fire-Protection in the Central Provinces.

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Introduction.

DURING the cold season of 1882-83, Dr. Schlich, Inspector General of Forests to the Government of India, made a tour of inspection through a considerable portion of the forests in the Central Provinces, and embodied his observations and views in his Suggestions regarding Forest Administration in those Provinces. This volume contains an admirable description of the character of the different forests, an accurate review of the constitution of the forest area belonging to the State, a sufficiently detailed history regarding the former management of the forests and that existing at the time of his visit, observations on the result of such management, and, finally, thoroughly practical suggestions regarding the future administration of the Forest property. From subsequent Annual Reports it seemed evident that the suggestions made by the Inspector General—more especially such as referred to the consolidation of the Reserves of the different classes under one management, and the reorganization of the Department—were hanging fire, and I was consequently instructed to visit the Central Provinces with a view to ascertain, by personal enquiry and observation, how far Dr. Schlich's proposals had been accepted, and what were the reasons preventing or delaying their practical introduction.

Reason why Inspector General of Forests was deputed to Central Provinces.

2. I met Colonel Doveton, the Conservator of Forests, at Harda, a station on the Great Indian Peninsula Railway, on the 6th November 1885, and we marched through the Rajaborari, Saonligarh, and Bowergarh Reserves, in the Hoshangabad and Betul Districts, up the Tawa valley, through the Maturdeo forests, and through part of the Kanan forests in the Chhindwara District, to Nagpur, where we arrived on the 9th December. During part of this tour, we were accompanied by Messrs. King and Hicks, the District Forest Officers of Betul and Chhindwara.

Extent of Tour.

In Nagpur we were weather-bound for a fortnight, during most of which time it rained incessantly, making the roads utterly impracticable for camel carriage, and the rivers unfordable. I took train for Rajnangaon, and arrived at Raipur on the 27th December. I had to wait for my camp to come up, however, and only left Raipur on the first day of the new year, in company with Colonel Doveton, who had rejoined me, and with Mr. Thompson, the Deputy Conservator of Forests of the Chhattisgarh Division. We traversed the forests between the Mahanadi and the Joke rivers, examined the Kantranala and Hathibari Reserves, and re-entered the Chhattisgarh plain on the 17th January. From here Mr. Thompson returned, and Colonel Doveton and myself crossed the cultivated plain by long marches, and reached the Motinala Reserve on the 24th. In company with Captain Losack, the District Forest Officer of Jubbulpore and Mandla, who met us at Motinala, we went through the Mandla forests, visiting the Banjar and Jagmanlal Reserves, and reached Jubbulpore on the 7th February, whence I rejoined head-quarters at Calcutta.

In Nagpur I had the pleasure of obtaining several interviews with both the Chief Commissioner, Mr. Crosthwaite, and the Acting Chief Commissioner, Mr. Fitzpatrick. I had also the advantage of meeting the Commissioners of Nagpur and Jubbulpore, and the Deputy Commissioners of Nagpur, Raipur, Mandla, and Jubbulpore, as well as Mr. Fuller, the Director of the Department of Agriculture.

3. Dr. Schlich arranges his remarks and suggestions (which he prefaces by a general sketch of the forests) under the following heads:—

Dr. Schlich's proposals.

1. Area and Boundaries.
2. Organization.
3. Protection, especially against Fire.
4. Cultural operations.
5. Working of the Forests.
6. Financial Results.

His proposals may be shortly summarized as follows :—

1. To remove all distinction between 1st and 2nd class Reserves, and to place them under one general system of management; or to increase considerably the area of the 1st class Reserves.
2. To increase largely, but gradually, the Executive Staff, by the addition of 6 Sub-Assistant Conservators and a considerable number of Rangers.
3. To strengthen the Controlling Staff, by the additional appointment of one Deputy Conservator.
4. To fix and define authoritatively, as early as possible, the external and internal boundaries of all Government Reserves.
5. To introduce a more systematic working of the Government forests, regulated by the provisions of Working-Plans, or—where this is not at once feasible—to prepare, at least, Annual Plans of Operations for the Reserves of each District.
6. To extend fire-protection, by the usual means of isolation and watching; but, at the same time, to try and introduce a more general fire-protection, by closing any area burnt, against grazing and cutting, and thereby enlisting the interests of the population in the success of fire-protection.
7. To extend cultural operations on a moderate scale.
8. To introduce additional conservancy measures in forests worked under the Commutation, License, and Kham Tehsil systems.

Proposal I.

TO REMOVE ALL DISTINCTION BETWEEN 1ST AND 2ND CLASS RESERVES, AND TO PLACE THEM UNDER ONE GENERAL SYSTEM OF MANAGEMENT; OR TO INCREASE CONSIDERABLY THE AREA OF THE 1ST CLASS RESERVES.

Changes in the areas of Reserved Forests between 1st April 1882 and 1st April 1886.

4. The status of Government forest property has not changed very materially since 1882. A few thousand acres of Unreserved Forests were given up for cultivation; but new lands were acquired by purchase, reversion, and exchange; and the total area of the Government forests has been increased from 19,719 to 19,838 square miles, or by 119 square miles. The area of Reserves was augmented only by 9 square miles, but the reservation of some of the most important areas purchased is now in progress of completion.

Dr. Schlich's proposal for abolishing all distinction between 1st and 2nd class Reserves is still under consideration, and, in the meantime, the areas of locally so-called 1st class Reserves was increased by 917 square miles on the 1st April 1886. This was effected by the transfer of 908 square miles from the Reserves of the 2nd class, and by the addition of 9 square miles of newly acquired forest lands. The returns stand, on the 1st April 1886, as follows :—

	Square miles.
1st class Reserves	3,505
2nd " "	15,929
Total Reserves ...	19,434

The distinction between 1st and 2nd class Reserves is an artificial one.

5. The distinction between the two classes of Reserves is entirely artificial, for they are constituted in the same manner, contain forest growth of the same character, and are intended to fulfil the same purposes.

1st and 2nd class Reserves are constituted in the same manner.

As regards the first, all Government Forests in the Central Provinces, with the exception of a few subsequently acquired by purchase, reversion, or exchange, have been declared to be Reserved Forests under Section 34 of the Indian Forest Act. At the time of the Revenue Settlement, 36,000 square

miles were made over to the Malguzars, and Government rightly considered that all possible claims which could be made, on the plea of justice, equity, and even liberality, had been sufficiently enquired into and amply satisfied; and it was therefore decided that no further enquiries were necessary under Section 34 of the Forest Act. The result of the Revenue Settlement was that the waste lands not made over to Malguzars at the time of such Settlement became the unrestricted property of the State, and the consequence was that the Forest-Reserves formed out of these lands were, and are now, entirely free of rights. This holds good for the 2nd class Reserves, as well as for those of the 1st class, and, in this respect, no possible objection can consequently be entertained against the amalgamation of both classes under one management.

1st and 2nd class Reserves contain the same sort of Forest.

That no important difference exists in the character of the forest growth may be admitted on the recorded evidence of numerous inspections—evidence which can be verified by examination of any particular forest block. The forest growth doubtless differs as regards density and general appearance; but this is due to the fact that most of the so-called 1st class Reserves are further removed from the markets of the cultivated plains, and have, moreover, for years been more carefully protected, especially against fires. Those forests which have, in many respects, to bear the brunt of the burden with regard to the supply of local markets, are frequently the worst cared for; and, in order to remove this anomaly, Dr. Schlich's proposals should commend themselves. For only by an amalgamation of all Reserves under one management, is it possible to secure a treatment for each forest proportionate to the demands made on it.

1st and 2nd class Reserves are intended to fulfil the same purposes.

The purposes which the Reserves of either class have to fulfil are the same, and the demands made on them differ only in degree, and in proportion to the nearness of the market and the accessibility of each forest. The most important function of all forests in the Central Provinces is to supply the local demands, be they private or public. It is quite possible that it may be advisable to work, under a short rotation, certain forests near cultivated Districts, in which a demand exists for small wood, and that other forests further removed, less accessible, or, for some other reason, less burdened with a local demand for small timber, should be treated with a view to produce material of larger dimensions; but these are details of working, which by no means demand a difference in the administration and general management. The forests which have to meet a brisk local demand are those which require the most intense protection, in order to maintain the continuity of the supply.

Proposal I has not been carried into effect.

6. The accuracy of these remarks cannot be gainsaid, and is generally acknowledged; but, nevertheless, Dr. Schlich's proposals for removing all distinction between 1st and 2nd class Reserves, and for closing a certain proportion of the area in rotation, have not, as yet, been practically adopted; nor has the progress in the transfer of large areas of 2nd class Reserves to those of the 1st class, which Dr. Schlich recommended as an alternative, been sufficiently rapid to prove that this policy has been accepted as the one most suitable for removing the distinction between the management of 1st and 2nd class Reserves.

Reasons for this are questions of Control and insufficiency of Establishments.

7. In theory, the dual management of the Reserves cannot be defended, and the reason why so little progress was made in bringing all Government Forest Reserves under one systematic management is due to indecision as to which of the two alternatives should be accepted—an indecision which is aggravated by uncertainty as to the probable relationship between District and Forest Officers in the future management of the tracts in question, and by the certainty that the existing Forest Establishment is quite inadequate for the more conservative management of largely increased areas.

A fixed policy with regard to the future Control must be decided upon before progress is ensured.

8. The present relative position of District and Forest Officers, under which the Forest Officer is subordinate to the Deputy Commissioner with regard

to 2nd class Reserves, and independent in his administration of 1st class Reserves, is entirely false, and a distinct future policy has to be decided upon before satisfactory progress can be expected in the transfer of all Forest Reserves to one systematic management. In order to show how the relationship between District and Forest Officers affects an early solution of the question, it will be necessary to follow the gradual development of the present state of things.

Before an organized Forest Department was introduced in the Central Provinces, all forests and waste lands were under the general, somewhat vague, and insufficient control of the District Officers. These forest lands were, by many, regarded as an obstacle to the extension of cultivation, and, at that time, frequent—but luckily, in most instances, unsuccessful—attempts were made to alienate them by sale. For a long period, the importance of forests in the household of nature was not known, or at least not acknowledged; and this state of things lasted until failures in the supply of forest produce—and more especially of timber for works of public utility—were felt, and the glaring waste of public property which took place in supplying such demands through contractors (who had no interest in the forests and ruined them) was brought to notice. This led to the establishment of the Forest Department throughout India, and in the Central Provinces the Department was first organized in 1863.

In the first instance, large compact tracts, more or less removed from inhabited tracts of the country, were made over to the Forest Department, with a view to growing large timber for public works. To these, new forests were added from time to time, and the areas under the direct control of the Forest Department stood year by year as follows:—

	Square miles.
1863-64	—
1864-65	481
1865-66	1,859
1866-67	1,859
1867-68	1,859
1868-69	1,859
1869-70	1,859
1870-71	1,669
1871-72	1,884
1872-73	1,884
1873-74	1,916
1874-75	2,134
1875-76	2,333
1876-77	2,392
1877-78	2,549
1878-79	2,502

Origin of the present dual Management.

9. In 1877 a system was introduced, under the advice of Dr. Brandis, by which all forests reserved under the Forest Law then in force, remained under the control of the Conservator and his Officers, as entirely separate from all lands under the Deputy Commissioners; whereas all Unreserved Forests were placed under the Deputy Commissioners, who, in regard to their management, were to be assisted by professional District Forest Officers. It was at the time resolved that all forests which it was necessary to maintain permanently as such should gradually be Reserved.

Reservation of all Government Forests: maintenance of dual Management.

10. In 1879, all Government forests were, as already stated, declared to be Reserved and those which, at the time, remained under the absolute control of the Conservator of Forests were denominated 1st class, whereas those under the Deputy Commissioners were defined as 2nd class Reserves. Transfers were, from time to time, made from the Forest Reserves of the 2nd class to those of the 1st class.

The area of 1st class Reserves was :—

	Square miles.
In 1879-80	2,535
„ 1880-81	2,535
„ 1881-82	2,588
„ 1882-83	2,593
„ 1883-84	3,435
„ 1884-85	3,505
„ 1885-86	3,505

The dual Management was an improvement from a Revenue point of view, but did not ensure conservative treatment.

11. From a purely Revenue point of view, the arrangement in accordance with which the 2nd class Reserves were placed under the District Forest Officer, and the District Forest Officer under the Deputy Commissioner, worked exceedingly well. A more systematic management was introduced, and the revenue increased in consequence. The Forest Police was rendered more effective. But, in other respects, it can hardly be said that any very material improvement ensued, or has as yet ensued, in the management of the 2nd class Reserves; and, on this account, the transfer of 2nd class Reserves to those of the 1st class has been, hitherto, constantly urged, in order to provide for a more conservative treatment of the latter Forests.

The system of 1877 must end in transferring all Forest Reserves to the control of the Forest Department.

12. It has been generally accepted that all Reserves which are to be permanently maintained as such shall be transferred, in this way, sooner or later, to those of the 1st class, and that the rest of the forest area shall be made over for cultivation. The tracts thus transferred to the 1st class are, under the existing arrangement, placed under the absolute control of the Forest Department. The system of dual management introduced in 1877 must, consequently, cease to exist, and the entire control over the Reserves must, in time, gradually concentrate itself in the Forest Department; that is to say, if no change in the present plan is intended.

The support and assistance of the District Officers is rendered less actively by reason of the curtailment of authority implied by transfers.

Whether this unlimited control on the part of the Forest Department is desirable or not, is a question which I shall discuss further on; but, in the meantime, every forest transferred, under existing arrangements, to the 1st class withdraws the area concerned from the control and authority of the Deputy Commissioner; and such transfers, even if not opposed, rarely find, therefore, that support which would facilitate the work. The transfers which meet with the most active opposition are those connected with tracts nearest to the market, and which are naturally of the greatest importance, and burdened with the heaviest local demands, and the management of which should consequently receive the greatest care and attention.

The idea that the Forest Department should only grow big trees for the requirements of public works, and to meet the demands of large markets and the trade generally, has, it is true, more or less exploded, and it is now acknowledged that Forest tracts intended to supply local demands require the aid of Forest Conservancy. But the professional Forest Administration is not, as yet, generally credited with the desire to consider the requirements and conveniences of the people at their full value. There may have been just reason for this assumption where the existence of a general communal right in all Government forest property was maintained to exist—a right adverse to, and frequently prohibitive of, a conservative forest management. But where, as in the Central Provinces, the raiyat is a paying consumer, such fear need not be entertained; for, under such circumstances, it is in the interest of the Forest Department to grow as much of the produce in demand as the potential capability of the forest will permit.

Summary of reasons why the proposals under discussion have found no active support.

13. The transfer of extensive areas to the absolute control of the Forest Department has—judging by previous progress—apparently not found that support which would encourage us to believe that the whole area that it is desirable to maintain as permanent Forest Reserves would, within a reasonable

period, be transferred to the 1st class Reserves; at least so long as this involves a change of control. I have no doubt but that a sudden removal of all distinction between 1st and 2nd class Reserves would meet with opposition on the part of the general District Administration, if this involved the absolute control by the Forest Department of the whole area, and a corresponding diminution in the authority of the Deputy Commissioners. On the other hand, the local Forest Department would appear to apprehend that, if the whole area of 2nd class Reserves is transferred to the 1st class, with the undiminished authority of the Deputy Commissioners still upheld over them, the management of all Reserves, even of those now under stricter protection and control, and more advanced conservancy, would drift backwards, and resume the character of the present 2nd class Reserves, which, to say the least, is by no means permanent in its policy, depending entirely, as it does, on the opinions of the Deputy Commissioner in charge for the time being. To expose the forests, which have already benefited by a more steady conservative treatment, to this danger would be a retrograde step, and the fears of the Forest Department in this respect are not quite without reason.

It will thus be seen that, though the proposals made by Dr. Schlich met with a theoretical acknowledgment, and no direct opposition, they also found, for several years at least, no really cordial support from either party.

A gradual systematic transfer of 2nd class Reserves is proposed, instead of an immediate abolition of all distinction between the two classes.

14. After local inspection and enquiry, and after having fully discussed the question, I am confirmed in my opinion that the only true solution lies in the total abolition of all distinction between the 1st and 2nd class Reserves, with regard to all forests which it is intended to maintain in permanency; on the other hand, I am also convinced that this policy cannot be carried into effect by a stroke of the pen, and must proceed gradually, but energetically, and on a preconsidered plan, and not, as formerly, spasmodically.

The necessary Establishment is not forthcoming.

My reasons for recommending a gradual transfer of the 2nd class Reserves to those of the 1st class are that nothing practical would be effected by such transfer without a proportionate increase in the Executive and Protective Staff, the organization of which must be a question of time. Even if the financial sanction to the necessary increase was forthcoming without delay, a sufficient number of adequately trained and reliable subordinates would not be at once procurable.

The Administrative difficulty regarding future Control.

Another reason against an immediate and wholesale transfer lies in the administrative difficulty already pointed out—*viz.*, that the Deputy Commissioner would, as a rule, object to yield the whole control of these areas to the Forest Department, which, under existing circumstances and with the present Establishment, can hardly guarantee a more efficient control than that which now exists; and it is evidently undesirable to call the Reserves of the 2nd class 1st class Reserves without, at the same time, introducing such improvements in their management as will secure their permanency from a sylvicultural point of view.

A change in name alone would serve no practical purpose

A change in name alone would not improve matters; it would not alter the present system of management, and would, on the contrary, encourage a continuance of the present lax conservancy of the 2nd class Reserves under another name, and such laxity might possibly even extend to some of the Reserves that are already under a more strict control.

The framing of Plans for the treatment of the Reserves requires time

This can, of course, be counteracted by the introduction of Working-Plans, and curtailed by the provisions of such plans, or even by more general plans of operations. The control exercised by the District Officer would then lose much of what is now objectionable in it and opposed to a permanent forest policy; and the final extension of such control—limited by preconsidered forecasts of working,—to all forests in a District is, in my opinion, a distinct advantage to Forest Administration. But, however preliminary and general such working-plans or plans of operations may be, their

promulgation requires time, and this is another reason against a sweeping transfer of 2nd class Reserves to those of the 1st class.

Mr. Thompson's proposal to transfer at once 3,200 square miles to 1st class Reserves is unobjectionable, but in future the transfer should be completed District by District.

15. Shortly before I visited the Central Provinces, Mr. Thompson had been deputed to make enquiries regarding the existing practice of Forest Management in the 2nd class Reserves, and to submit proposals for amendment, if necessary. I purposely waited, before submitting my suggestions, for the appearance of Mr. Thompson's special Report. This Report I have now before me, together with the Conservator's remarks thereon and the Chief Commissioner's orders and views.

Mr. Thompson proposes that 3,200 square miles of 2nd class Reserves should be at once added to the areas of 1st class Reserves, and that it should be the work of the next few years to bring these areas under stricter control and management. This proposal, I understand, meets with the approbation of the Chief Commissioner.

The transfer of these areas—which, if sanctioned, will add 800 square miles to the 1st class Reserves of the Jubbulpore Division, 1,500 square miles to those of Nagpur, 215 square miles to those of Nerbudda, and 700 square miles to those of Chhattisgarh—has, I believe, been under consideration for some time past, and, under these circumstances, I have no objection to offer to the proposal; but I am of opinion that, in future, it will be advisable that the transfer should be completed District by District, beginning with those in the Nerbudda valley, where the selection has already advanced further than in other Districts, and where it is most desirable that a final separation should be effected between the lands to be permanently reserved and those which can be utilized for cultivation.*

The final control of all Forests in a District must be vested in the Deputy Commissioner.

16. When the transfer of all Reserves in a District has been completed, their control should be vested in the Deputy Commissioner, and the Forest Officer should become his Assistant in regard to all forests in his District. Experience has shown that control and protection are strengthened by an adherence to this system, and I am convinced that, during the time which must elapse till such transfer can be completed, all reasons for objecting to such arrangement, even those based on the necessity of forming large contiguous forest blocks, situated in different Districts, into one range, will gradually disappear as facilities of communications increase and the forests become of greater value and importance. The idiosyncracies of individual District Officers, who should not favour Forest Conservancy, will be counterbalanced, and bereft of the more harmful results that they might otherwise give rise to, by the provisions of working-plans and preliminary plans-of-operations. Moreover, the proposal made by Colonel Doveton, and supported by the Chief Commissioner, that the Deputy Commissioner should take no action in Forest matters, except through the Forest Officer, robs the system of its last objection.

The Districts in the Nerbudda valley are again, in this respect also, those in which the introduction of the proposed scheme is most feasible, and everything tends to show that the complete introduction of the system should first be undertaken in the Nerbudda Division.

During the transition stage, and till all Forests are brought under more conservative control, the present arrangement may perhaps be allowed to continue.

17. It would certainly seem inadvisable that part of the 1st class Reserves should remain under the immediate control of the Forest Officers, and that a portion thereof, and all 2nd class Reserves, should be managed by the Deputy Commissioners. Such an arrangement would complicate matters even more than at present, and would introduce three different methods of management where we have now but two. I have already stated that I do not share the Conservator's objection to a transfer of the control of all forests in a District to the Deputy

* *Vide* letter No. $\frac{2313}{176}$, dated 22nd May 1886, from Officiating Chief Commissioner, Central Provinces, to Government of India, Home Department.

Commissioner; but, in regard to such Reserves as will be transferred to the 1st class during the period of transition already referred to, it will probably be advisable to maintain the existing administrative arrangement, under which all 1st class Reserves are under the absolute control of the Conservator of Forests and his Officers, and to adhere to this principle until all Reserves in a District, intended for permanent maintenance as such, shall thus have been transferred.

Proposals II, III, IV, and V.

GENERAL.

If this transfer is sanctioned, the questions of Establishment and Working-Plans become imminent.

18. If the proposal to add at once 3,200 square miles to the area of 1st class Reserves be accepted, it will be essential that the necessary Establishment for their protection and control should be organized without delay, and that Working-Plans, or at least preliminary plans-of-operations, should be framed for their management, for it is absolutely necessary to show that such transfer, though entailing a stricter conservancy, does not withdraw, and does not aim at withdrawing, the forest from the use of the public.

A large area of Malguzari and Zamindari forests is still in existence in the Central Provinces, and a great extent of this must always remain wooded. The people are, consequently, not so entirely at our mercy, as would appear from paragraph 15 of the Chief Commissioner's letter No. $\frac{3310}{148}$, dated 26th July 1886; but, no doubt, they are largely dependent on the Government Reserves for their supply of forest produce, and it behoves Government to show, from the outset, that they intend to work their forest property for the largest possible benefit of the country. It must be our duty to prove that, by a stricter system of conservancy, we do not deprive the people of the necessaries of life, but that we augment the supply by increasing the potential capabilities of the forests.

Proposal II.

TO INCREASE LARGELY, BUT GRADUALLY, THE EXECUTIVE STAFF, BY THE ADDITION OF 6 SUB-ASSISTANT CONSERVATORS AND A CONSIDERABLE NUMBER OF RANGERS.

Proposals to increase Forest Establishments have already been submitted to the Local Government.

19. Proposals for an increase in the Establishment have already been submitted to the Local Government by the Conservator. These proposals are based on the supposition that 16,000 square miles must, and will, eventually remain as permanent Forest Reserves. I have the scheme before me now, and have had the advantage of discussing it at length with Colonel Doveton, the Conservator.

The assumption that 16,000 square miles is the minimum area which the Forest Department will be called upon to administer is ably justified by Colonel Doveton as follows:—

Referring to the Central Provinces Administration Report for 1881-82, it is found that of the cultural le assessed area, 14,141,007 acres are cultivated, and 11,810,999 acres are still uncultivated, and that the population in the khalsa amounted to 9,838,791. It is true that a small portion of the khalsa population may be supported by a cultivated area not included in the above 14 million and odd acres; still it may fairly be assumed that at the present time a cultivated area of 14 million acres supports a population of 9·5 million people. It is also reasonable to assume that the 11 million acres of culturable assessed land will gradually come under the plough, and area for area will support a population at least equal to that supported by the present cultivated assessed area, at which rate provision would have to be made for nearly 17 million people.

It is, however, admitted that the present cultivated area is under-cultivated; and seeing that if the area of the Reserves is reduced, it will probably be to meet demands for land for cultivation, it may fairly be assumed that provision will have to be made for the forest requirements of 20 million people.

The minimum requirements in forest produce per head of population per annum are estimated at 12 maunds. At present the rate of consumption over a considerable portion of the provinces is without doubt much higher, in parts four or five times as much. In the above estimate no allowance is made for railways and other public works, or for produce that may be required for local industries; but taking the demand at 12 maunds per head of population, provision has to be made for the supply of 240 million maunds of forest produce per annum.

It is found that, besides the Reserves of whatever area may ultimately be fixed, there are 10,548,429 acres classed as unculturable assessed waste, and 1,879,189 acres classed as assessed grazing land, which will contribute more or less in meeting this demand. Considering the conditions under which these forests exist, and the treatment to which per force of circumstances they are likely to be subjected, it would certainly not be safe to rely on them for a larger annual yield than 6 maunds per acre (in practice it will probably be less), which would give a total annual yield of 72 million maunds, leaving 168 million maunds to be supplied from the Reserves.

If it be urged that, besides the private wastes in the khalsa, there are extensive sources of supply in the Feudatory States, I would submit that these forests are generally too remote to meet ordinary requirements in the khalsa; that there also is a field for the extension of cultivation, which must lead to a reduction of the forest area; and that whatever they may supply will be more than counterbalanced by demands from without the provinces, and by demands on the khalsa from Feudatory States, and therefore these forests cannot be taken into account in considering the means of meeting the demands herein referred to.

Assuming that the area of the Reserves fell to 16,000 square miles, an annual demand of 168 million maunds would necessitate that the annual rate of production amount to 16·8 maunds per acre, or that the supply fall short of the demand. Allowing that, as must be the case in the more productive forests, it is only possible to utilize part of the annual yield, it is evident that the Government forests cannot at present contribute on the average 16·8 maunds per acre per annum to meet the wants of the people. Whether or not they will do so in the future is a matter of speculation. I am of opinion that such an average yield may be hoped for, notwithstanding that a large area of poor and unproductive land must necessarily be included in the Reserves.

Present Establishment.

20. On the 1st April 1886, 3,505 square miles were administered as 1st class Reserves, 15,929 as 2nd class Reserves, and 404 as Unreserved Forests, or 16,333 square miles as forests not 1st class Reserves.

The Establishment sanctioned stood as follows on that date, and was distributed as shown in the table appended (Appendix A) :—

	Designation.	Total.*		For Forests not 1st class Reserves.†		For 1st class Reserves.	
Permanent	Sub-Assistant Conservators	4	...	.	..	4	..
	Rangers	22	..	10	...	12	...
	Apprentices	3		...	...	3	...
	Foresters	41		3	...	38	...
	Guards	158	...	10	...	142	...
Temporary ...	Darogas	..	8		7	...	1
	Jamadars	...	30	...	26	...	4
	Dafadars	.	167	.	133	...	34
	Moharrirs or license-vendors	.	123	...	118	...	5
	Chaprasis or watchers	...	1,406	...	1,134	...	272
	Total	228	1,734	20	1,418	100	316

* Appendix A to Colonel Doveton's letter No. 171-R., dated 13th January 1886

† Paragraph 15 of Mr. Thompson's Report.

Extent of Charges in 1st class Reserves.

21. We find, classing Darogas as belonging to the Executive Staff, that 17 Officers of this class were required for the management of 3,505 square miles, which shows an average charge of a little over 206 square miles for each officer. Jamadars and Dafadars being graded as Foresters, the total amounts to 76, or one officer of this class for a little above 46 square miles. The rest of the Temporary Establishment may be placed under the denomination of Guards, and shows a total of 419 officers of this grade, or one for nearly every 9 square miles.

Former extent of Charges not excessive.

Experience has proved that the Establishment thus actually employed is by no means excessive for the adequate management of the 1st class Reserves, and it may be presumed that the areas which will hereafter be brought under a similar management will require an Establishment on a similar scale, the more so that they are, as a rule, nearer the market and more exposed, and

consequently require an even more thorough protection than those further away.

Extent of Charges proposed by Colonel Doveton.

Colonel Doveton, in his proposals recently submitted to the Local Government, assumes that it will be sufficient to have one Ranger in charge of every 300 square miles, one Forester for every 50 square miles, and one Forest Guard for every 10 square miles. I understand, however, that these proposals are not in accordance with the views actually held by the Conservator, who considers that a much larger number of Rangers will be ultimately required, but has deemed it necessary to be exceedingly moderate in his demands, with the view of effecting an immediate, if incomplete, improvement in the numerical strength of his Establishment. With regard to Foresters and Guards, the proposals may, I think, be accepted; but I consider that it is not justifiable to reduce the number of Range Officers below the proportion which it has been found necessary to employ hitherto for the management of the present 1st class Reserves—a proportion that is, even now, very inadequate when compared with similar conditions in other Provinces. Even, in their application to Foresters and Guards, the Conservator's proposals must be regarded as representing the lowest possible scale of establishment compatible with the circumstances of the case.

Sub-Assistant Conservators not, as a rule, available for Range Charges.

22. The Conservator also assumes, in his proposals, that the Sub-Assistant Conservators will be available for the charge of Ranges. This will not be the case, for it has been recognized as essential that the Controlling Staff should either be materially strengthened, or that the Sub-Assistant Conservators must be utilized for the less important controlling charges, if the most desirable system of having a District Forest Officer for each District is to be carried out in its entirety. There are 18 Districts in the Central Provinces, and the number of Officers sanctioned for the Controlling Staff amounts to 14 Officers only, in addition to the Conservator.

Under these circumstances, Sub-Assistant Conservators cannot be taken into consideration when providing for the charge of Forest Ranges.

Estimate of Subordinate Forest Establishment which will ultimately be required.

23. The minimum of the Subordinate Forest Establishment, apart from Sub-Assistant Conservators, which will be ultimately required for the management of 16,000 square miles, will, therefore, stand as follows:—

	According to Colonel Doveton's proposals.	Calculated on the proportion of existing Establishment in 1st class Reserves.	As accepted in this Report.
Executive Staff.			
Rangers	50	77	77
Protective Staff.			
Foresters	300	347	300
Guards	1,600	2,000	1,600

Estimate of Establishment required at once.

24. It has been accepted, in a former part of this Report, that it will not be possible to transfer at once the whole of the 2nd class Reserves to those of the 1st class; and the adoption of the proposals made by Mr. Thompson have been, consequently, advocated, whereby 3,200 square miles will be added immediately to the 1st class Reserves, and their organization and management effected—with the assistance of an adequate Establishment—during the next few years. This measure will necessitate, according to the above scale, the following immediate increase:—

Rangers	15
Foresters	64
Guards	320

The Temporary Establishment attached to the already existing permanent Reserves should, at the same time, be made permanent; for, as already stated, experience has shown that it is by no means excessive. This will entail an additional sanction for :—

Ranger	1
Foresters	38
Guards	388

The Permanent Establishment for the 6,705 square miles of 1st class Reserves, the constitution of which it is proposed to complete at present, would then stand as follows :—

Rangers	28
Foresters	134
Guards	671

This will necessitate, as regards 1st class Reserves, an additional sanction of :—

Rangers	16
Foresters	96
Guards	529

I have not considered the sanction for Apprentices, which might, with advantage, be of a temporary character, since their number must change with the requirements of the service.

No sanction will, if the above proposals are accepted, be required for the Temporary Establishment now entertained for the 1st class Reserves, and the following reductions can, accordingly, be effected in the same :—

1 Daroga	(Classed with Rangers.)
4 Jamadars	(Classed with Foresters.)
34 Dafadars	
4 Moharrirs	(Classed with Guards.)
276 Chaprasis	

Extent of Charges in 2nd class Reserves and Unreserved Forests.

25. Classifying Darogas, Jamadars, Dafadars, Moharrirs, &c., of the 2nd class Reserves, as Rangers, Foresters, and Guards, in the same manner as was adopted for the 1st class Reserves in paragraph 21 of this Report, it will be seen that, if the forests were broken up into specific executive charges, a Range would average 960 square miles ($\frac{16,333}{17}$), a Forester's charge 102 square miles ($\frac{16,333}{162}$), and that of a Guard nearly 13 square miles ($\frac{16,333}{1,268}$).

Reduction in the Establishment sanctioned for 2nd class Reserves when transferred to the 1st class.

26. If then 3,200 square miles are transferred from this area, and their management is provided for under 1st class Reserves, it should be possible to reduce the Establishment for the 2nd class Reserves in the above proportion, or by 3 officers classed as Rangers, 31 as Foresters, and 246 as Guards.

So far as I can see, there is no objection to this with regard to Officers graded as Foresters and Guards; but it would be very inadvisable to reduce the numbers graded as Rangers below the present number (17), for their charge would still average 775 square miles ($\frac{13,139}{17}$).

Permanent Establishment for 2nd class Reserves.

27. Of the whole Permanent Establishment at present employed in the management of the 2nd class Reserves, the following are already permanent :—

10 Rangers,
3 Foresters, and
16 Guards.

Whether it will be desirable to place the rest, or part of it, on the Permanent Establishment is a question in reference to which I have no very decided opinion to offer; but the measure seems hardly necessary before the proposed organization for the 1st class Reserves shall have been completed. When this has come to pass, the organization of a permanent staff will proceed, gradually, according as new areas are transferred to the Reserves of the 1st class, in proportion to the scale at present adopted, and subject to such alterations as experience may have proved to be advisable.

28. If it be decided that the Permanent Establishment for the 2nd class Reserves shall not be altered, the Permanent Subordinate Establishment for the Province will stand, according to the above proposals, as follows :—

Total of Permanent Establishment proposed.

Designation.	6,705 square miles of 1st class Reserves.	2nd class Reserves.	Total.
Rangers	28	10	38
Foresters	134	3	137
Guards	671	16	687
Total ...	833	29	862

Reduction in Temporary Establishment.

The total reduction in the Temporary Staff would be :

Designation.	1st class Reserves.	2nd class Reserves.	Total.
Darogas	1	...	1
Jamadars	4	31	69
Dafadars	34		
Moharrirs	4	246	526
Chaprasis	276		
Total ...	319	277	596

Additional sanction for Permanent Establishment.

This would necessitate the following increase in the sanction :—

Designation.	1st class Reserves.	2nd class Reserves.	Total.
Rangers	16	...	16
Foresters	96	...	96
Guards	529	...	529
Total ...	641	...	641

29. The insufficiency of the number of Officers available as District Forest Officers has been fully explained by Dr. Schlich in paragraphs 39 to 41 of his Suggestions. Dr. Schlich proposed an additional staff of one Deputy Conservator and six Sub-Assistant Conservators to meet the requirements of the case; but, in his recent proposals regarding an increase in the Subordinate Establishment, Colonel Doveton provides only for an addition of four Sub-Assistant Conservators. This number may perhaps be accepted as sufficient for the

Addition to the number of Sub-Assistant Conservators.

present, provided that two Officers are added to the Controlling Staff, for the reasons given in the following paragraphs, instead of one as recommended by Dr. Schlich.

Proposal III.

TO STRENGTHEN THE CONTROLLING STAFF, BY THE ADDITIONAL APPOINTMENT OF ONE DEPUTY CONSERVATOR.

This proposal is dealt with in my remarks on Proposals IV and V.

Proposal IV.

TO FIX AND DEFINE AUTHORITATIVELY, AS EARLY AS POSSIBLE, THE EXTERNAL AND INTERNAL BOUNDARIES OF ALL GOVERNMENT RESERVES.

Demarcation of Reserves requires early attention.

30. The acceptance of the policy sketched out in the foregoing paragraphs necessitates, in the first instance, an early and practical attention to the proposals made by Dr. Schlich regarding the demarcation of the boundaries of the Reserves and of the cultivated areas inside them; and, secondly, the promulgation of Working-Plans, or at least of preliminary plans-of-operations.

The boundaries of the 1st class Reserves, especially of those which were formed previous to the operations of the Revenue Survey, are, in most instances, beyond dispute, being well-defined and accurately shown on the maps; but those of the Reserves of the 2nd class are, as pointed out by Dr. Schlich, in a very unsatisfactory state, both with regard to correctness of position and the state of the boundary marks. The cultivated tracts which exist in many of the Reserves have also not, as a rule, been defined and demarcated with sufficient accuracy.

The work is more complicated than was formerly the case.

31. It is doubtless essential that both the external and internal demarcation of all Government Reserves should be beyond question; and this has been fully acknowledged by the local authorities, who have, of late years, made efforts to remedy the existing state of things.

It was foreseen that the final delineation and possible corrections of the boundaries of all Reserves would represent a very large amount of work, which could only be accomplished by degrees; and hence it was recommended that the more important tracts should be taken in hand first. It was proposed that, during the next few years, all the available strength of the Department should be concentrated on this work, so as to bring it to an early conclusion. The magnitude of the work and the difficulties to be surmounted have, however, since proved even greater than was expected at the time the proposals were made; and, to judge from the progress hitherto accomplished, a very early completion of the work seems somewhat doubtful, although the work is being pushed on with great vigour.

The Boundaries now on the ground should generally be recognized.

32. The boundary marks are frequently obliterated, or have, in certain cases, perhaps, never been made. The available patwaris' maps do not, as a rule, represent the delineation on the ground; and the Settlement records very often do not agree with either the maps or the boundaries on the ground. Sometimes these differences are small, in other instances considerable. The authoritative definition of the boundary on the ground is consequently a matter of considerable difficulty; and, in order to avoid a lengthy and costly Settlement, it will probably be advisable on the part of Government to accept the boundary at present recognized on the ground wherever the boundary of the old Settlement cannot be laid down with sufficient certainty, so long always as encroachment is not very evident, and the acceptance of such boundary does not involve a considerable loss of land.

The question before us is one of considerable magnitude, concerning, as it does, the final demarcation of upwards of 8,000,000 acres of forest land; and the loss of a few thousand acres here and there should not be allowed to interfere with its rapid and final completion. The boundaries of the tracts that have been transferred to the 1st class Reserves since the time of the Revenue

Survey, and of those which it is proposed to transfer at present, should be settled in the first instance, and after them should come, in due order, the boundaries of such forests as are to be transferred next.

The work of fixing the Boundary marks must be done by local agency.

33. I had an opportunity of seeing, in the Chhindwara District, how the work was carried on, and of discussing the question with the several Officers whom I met. I am unable to suggest any improvement on the present plan adopted, which would not at the same time involve a considerable additional outlay; and I do not think that any practical purpose would be served by the deputation of a party of the Imperial Forest Survey for this work.

A certain amount of traverse survey is required, in order to fix the position of the boundary marks in all places where this is uncertain; but where this is not the case, and where the position of the marks can be authoritatively fixed without such measurements, I would deprecate the agency now employed by us being used for the purpose of producing forest maps. The work is not good enough to serve as a departmental survey, and the maps produced piecemeal from the different patwaris' surveys would not be sufficiently reliable for our purposes. The sole aim of the present undertaking should, therefore, be to fix the position of the boundary marks on the ground.

A regular Forest Survey party should follow.

34. When this has been done, a regular Forest Survey party should follow up the work of demarcation, and execute a reliable boundary survey of all Reserves that it is intended to maintain permanently. This survey should be on the scale of 4 inches to a mile—a scale which serves every practical purpose—and it should include such topography as the scale will admit of and is considered necessary. The final settlement of the boundaries is already sufficiently advanced to warrant the immediate deputation of a party of the Forest Survey; but the work of the Imperial Forest Survey Staff is pre-engaged for several seasons in advance, and, without assistance, it cannot possibly take up work in the Central Provinces for years to come. Under these circumstances, I propose that the Central Provinces should depute an Officer to the Imperial Forest Survey, to learn the method adopted. This Officer could then be placed in charge of the Forest Surveys in the Central Provinces, but under the control of the Superintendent of Imperial Forest Surveys. The measure here proposed is in accordance with the scheme originally recommended at the time the Imperial Forest Survey was organized. The sanctioned staff of Controlling Officers in the Central Provinces is not strong enough to permit of the permanent deputation of an Officer to Forest Surveys, and I would therefore advise that sanction be obtained for an additional appointment. The survey of the permanent Forest Reserves will occupy the time of such Officer certainly for five years, probably longer; and, hereafter, he will be absorbed into the Controlling Forest Staff, which even at present is avowedly weak, almost too weak, for the ordinary work, and will be more so some years hence. If this proposal be accepted, and an Officer is deputed to the Forest Survey Branch during the next survey season, beginning in October next, the regular survey of the Forest Reserves in the Central Provinces can be commenced in the cold season of 1887-88. The Staff in the North-Western Provinces and Oudh is, just now, above its sanctioned strength, and it will, therefore, be possible to depute an Officer at once, pending sanction to the additional appointment. The cost of the superior control of the Forest Survey, and of the subordinate survey staff, would be borne by the Imperial Forest Survey.

An Officer from the Central Provinces should be deputed to the Imperial Forest Survey, and sanction should be given for an additional appointment on the Controlling Staff.

Proposal V.

TO INTRODUCE A MORE SYSTEMATIC WORKING OF THE GOVERNMENT FORESTS, REGULATED BY THE PROVISIONS OF WORKING-PLANS; OR, WHERE THIS IS NOT AT ONCE FEASIBLE, TO PREPARE, AT LEAST, ANNUAL PLANS-OF-OPERATIONS FOR THE RESERVES OF EACH DISTRICT.

Working-Plans necessary.

35. The establishment of Working-Plans in connection with all Reserves, intended to be maintained finally under forest, is of as great and immediate

importance as the final Boundary Settlement discussed in the preceding paragraphs. Without such Plans, a permanent policy in Forest Management cannot be secured, and their necessity is now so universally acknowledged that any further discussion of this point seems hardly required, particularly as the matter has already been dealt with in the Government of India Circular No. 21F. of the 6th December 1884. If it is considered advisable that all Government Forests should be worked and treated in accordance with preconsidered and prescribed plans, even when professionally-trained Officers are entrusted with their management, the necessity is all the greater when, as in the Central Provinces, it is proposed to vest the executive control of the Forest Management in the Deputy Commissioners.

So far, no progress has been made in the Central Provinces in drawing up regular Working-Plans, and experience in other Provinces shows that the only sound way of ensuring material progress in this direction is by the organization of a Working-Plans Division, as a Branch of the Conservator's Office. Without centralization and some separate organization, the work will remain desultory and without sequence. The duties of such Branch would be to undertake, at least for the present, the preparation of all the more elaborate Working-Plans for the most important forests; but, at the same time, it could also be utilized, to a very considerable extent, in directing the work of local Officers. Memoranda can be drawn up instructing local Officers as to the collection of facts necessary for the preparation of Working-Plans, prescribing the form in which such data should be arranged, advising as to the Plan itself, and giving any general directions as to its provisions. This system of utilizing the services of local Officers will lead to the bringing of all forests under the systematic management of Working-Plans, within the shortest possible time compatible with the machinery at our disposal.

Sanction for an additional Officer required for this work.

36. The Controlling Staff of the Central Provinces is, avowedly, barely sufficient, even with the utilization of the services of Sub-Assistant Conservators for the less important District Charges, to keep abreast of the executive forest work of the Province; and it will, therefore, be necessary to obtain sanction for an additional appointment. Even with the proposed organization, it will take many years before the whole of the extensive forest area in the Central Provinces can be brought under even a preliminary systematic management; and when this has been achieved, the time will have arrived when more elaborate systems will be required, by reason of the increased and growing importance of certain forests, and the development of the demands thereon. As a matter of fact, the time for which the services of a special working-plans organization will be required is practically unlimited.

General principles on which Working-Plans should be framed.

37. The general principles which should rule the preparation of Working-Plans are laid down very tersely in the Government of India Circular No. 21F. of the 6th December 1884, paragraph 4, which runs as follows :—

Every working-plan of a Government forest should be based upon the present condition of the forest, and it should deal with all points connected with its management and improvement. The details of this subject must be worked out gradually, but it may here be mentioned that the following are the most prominent matters to which the Forest Officers should direct their enquiries :—

(i) Calculation of the growing stock.

(ii) Calculation of the annual increase.

(iii) Calculation of the quantity of material to be removed, annually or periodically, with due consideration of the productive capabilities of the forest, and of the demand for forest produce.

(iv) Arrangements for the re-stocking of all cleared areas, by natural reproduction, sowing and planting, protection against fire and grazing, &c.

The detail or minuteness of a working-plan will depend on the demands which are made on the forest, the nature and value of the produce removed from it, and the other purposes which it is to fulfil. Where the demand equals, or exceeds, the possible yield, working-plans must be prepared with the greatest minuteness, and everything connected with the management must be arranged so as to obtain the highest yield which the forests are capable of returning under the most careful treatment. Where, on the other hand, the demand is as yet below the ordinary capability of the forests, a more rough and expeditious procedure may be followed. With the view of bringing all important forests under systematic management as soon as possible, the first working-plans may be of a simple description, and based on such data as may be readily obtainable, to be superseded by more accurate plans as the detailed information required for their preparation becomes available.

Special considerations in respect of Working-Plans for the Central Provinces.

38. With special regard to the nature of the Working-Plans required in the Central Provinces, the various systems of working the forests, as admirably described in Dr. Schlich's Suggestions of 1883, paragraphs 56 to 64, and as further detailed in Mr. Thompson's Report of 1886 on Forest Management in the 2nd class Reserves, must greatly influence the preparation of regular Plans.

As yet, there are only a few forests that are worked by departmental agency, and to which any method of exploitation, considered on its sylvicultural merits alone, can be at once applied. All other forests are more or less affected by established systems of working, which, though possibly open to grave objections, are thoroughly understood, and cannot, under existing circumstances, be ignored or be abruptly changed for more advanced methods. Wherever customary modes of working are found to be firmly established, as much consideration must be had for these as for other facts influencing the provisions of a Plan.

For instance, it may be found necessary to continue to work a forest by "license," or by the "kham tahsil," methods of control, and, consequently, to limit the prescriptions of the Working-Plan to the regulation of the areas to be worked, closed, improved, and otherwise treated. The main point is that whatever is decided upon should be laid down on well-considered lines, and for a number of years. This, irrespective of the degree of elaboration, will be the Working-Plan, which must entirely regulate the working of each forest until revised or altered by competent authority, and under the orders of the Local Government only.

Even with the organization of a Working-Plans Division, it will take some time before a system of regular Working-Plans can spread over the whole forest area; and, in the meantime, it will be necessary to introduce annual plans-of-operations for each District, as recommended in paragraph 37 of Dr. Schlich's Suggestions.

Preliminary Plans-of-Operations.

39. The procedure for the establishment and sanction of regular Working-Plans is laid down in the Working-Plans Circular already noticed in paragraph 38. Preliminary plans-of-operations, which may be annual, or for a short term of years only, should require the sanction of the Conservator and of the Deputy Commissioner, or of higher authority in case these officers could not agree. When such plans-of-operations have once been settled, the consent of the Conservator of Forests, and the Deputy Commissioner and the Chief Commissioner's orders, should be necessary, as recommended by Dr. Schlich, before any of their provisions could be altered. It is, of course, necessary and feasible to frame such Plans with sufficient elasticity to admit of considerable modifications in detail being made—modifications to which every preliminary Plan must be subject. As a rule, these Plans should, in the first instance, lay down only main principles and general provisions in regard to the working, protection, periodical closure, &c., of each forest tract.

PROPOSAL VI.

TO EXTEND FIRE-PROTECTION, BY THE USUAL MEANS OF ISOLATION AND WATCHING; BUT, AT THE SAME TIME, TO TRY AND INTRODUCE A MORE GENERAL FIRE-PROTECTION, BY CLOSING ANY AREA BURNT AGAINST GRAZING AND CUTTING, AND THEREBY ENLISTING THE INTERESTS OF THE POPULATION IN THE SUCCESS OF FIRE-PROTECTION.

40. The following table gives the results of fire-protection for the last 20 years—from 1865-66 to 1884-85 :—

Results of Fire-Protection for the last 20 years.

Year.	Total number of Acres.			Total Cost.	Cost in pies, per acre	
	Attempted.	Failed.	Protected.		Attempted.	Protected.
				Rs A. P.		
1865-66 ...	23,680	...	...	847 11 8	6·873	...
1866 67 ...	23,680	...	...	847 11 8	6·873	...
1867-68 ...	62,080	...	...	4,595 8 5	14·155	...
1868-69 ...	62,080	...	...	4,595 8 5	14 155	...
1869-70 ...	63,320	...	...	5,596 6 5	16·969	...
1870-71 ...	65,443	...	...	5,671 11 5	16·640	...
1871-72 ...	92,478	...	...	6,034 8 1	12·528	...
1872-73 ...	128,915	...	...	3,970 3 3	5·913	...
1873-74 ..	128,924	2,020	126,904	3,786 13 7	5·639	5·729
1874-75 ...	174,357	25,718	148,639	5,763 6 0	6·346	7·445
1875-76 ...	383,419	37,823	345,596	10,812 10 10	5·412	6·007
1876-77 ...	505,918	12,344	493,574	14,338 2 9	5·441	5·577
1877-78 ...	691,609	123,458	568,151	10,567 9 4	2 934	3·571
1878-79 ...	736,468	54,595	681,873	11,107 11 4	2·895	3 128
1879-80 ...	829,351	112,825	716,526	12,462 11 7	2 862	3·312
1880-81 ...	896,642	53,650	842,992	13,416 14 5	2·873	3·056
1881-82 ...	910,602	127,141	783,461	13,750 10 3	2·921	3·370
1882-83 ...	910,659	20,076	890,583	15,571 13 1	3 283	3 357
1883-84 ...	914,403	39,995	874,408	17,137 9 8	3 598	3·763
1884 85 ...	917,951	22,590	895,361	18,615 8 0	3·852	3·950
Totals ...	8,521,979	632,235	7,889,744	1,79,490 14 2	4·044	4·368

This table was carefully prepared from all the sources at our disposal, and represents our present knowledge of the history of fire-protection in the Central Provinces. The details regarding the fire-protection of each block of forest have also been traced as far as feasible, and the results are shown in Appendix B.

The fire-conservancy tables prepared in the Inspector General's Office can only show the most unfavourable aspect of each case, which, in reality, is almost invariably far superior.

41. During the earlier years of fire-protection, failures were not recorded, and it may be accepted, but only on hearsay, that the protection was more successful previous to 1873-74; but even if it was so, a glance at the table above will show that it cost between three or four times as much per acre as in recent years, and that it affected only insignificant areas when compared with what we now protect.

Earlier Fire-Protection perhaps more successful, but certainly more costly and less extensive.

During the years 1877-78, 1879-80, and 1881-82, fire-protection failed over areas amounting to 123,000, 113,000, and 127,000 acres, respectively, aggregating 17·80, 13·60, and 13·90 per cent. of the area it was attempted to protect; but the average of failures during the last 10 years amounted to less than 8 per cent., and this result was achieved at an outlay of less than 4 pies per acre per annum.

42. The following is a list of the ten blocks of forests in which fire-protection has been most unsuccessful. They are arranged in the order of percentage of failures :—

Name of Forest.	Percentage of Failures.
(1) Chandgarh	32·30
(2) Rangir	26·42
(3) Punasa	20·16
(4) Erjhar and Dhuga	17·18
(5) Kalibhit	11·63
(6) Khamapur	11·05
(7) Bowergarh	10·39
(8) Banjar	8·33
(9) Hathko	8·71
(10) Taroba	6·88

In ten of the other blocks in which fire-protection was attempted, the percentage of failure was between 5 and 2 per cent.; in four, between 2 and 1 per cent.; and in the rest, less than 1 per cent.

During the last three years, the area over which fire-protection failed amounted to 3 per cent. only of the forest over which it was attempted, and the average cost of the area protected amounted to 3·69 pies per acre per annum.

Occasional Fires do not eradicate the beneficial results of prolonged previous Fire-Protection.

43. In the Hathibari Reserve, the effects of a fire which traversed a portion of it in 1879-80, after several years of protection, are not now discernible.

In Jagmandal, it is impossible to now recognize the evil results of a fire that occurred in 1874-75, and even the effects of a more recent fire, which took place in 1882-83, are rapidly disappearing. The difference between this tract and the forests outside the fire-protected Reserve is most striking, whereas it requires close observation to distinguish between the area burnt over and other portions of the same Reserve.

In Rajaborari and Saonligarh, the effects of recent fires have not so entirely disappeared as in the Reserves just mentioned; but my observations have been everywhere to the same purpose, and show that an occasional conflagration in a forest which has been protected for some years is far less destructive in its results than is generally believed—a belief in which I, myself, shared to a considerable extent.

In the Banjar Reserve, and to a less degree in the Kantranala Reserve, the effects of recent fires seem to me to be more lasting than in any other forests inspected by me. The grass, especially in the Banjar Reserve, is very dense and high, and the fire of 1879-80 must have been extremely severe, to judge by its effects on poles and mature trees. To what degree, however, the present condition of a considerable portion of the older forest is still due to former forest fires—which recurred year after year before fire-protection was attempted—can only be accurately determined by people possessing a previous knowledge of the forest; and I may probably over-estimate the effects of the conflagration of 1879-80. Reproduction and young growth are rapidly outgrowing all traces of previous fires.

Extension of Fire-Protection is advisable.

44. On the whole, though certain forests are more difficult to protect than others, and some are more severely affected by an occasional fire, the results of fire-protection throughout the Province have been so eminently satisfactory—as regards cost, success, and results—as to demand further extension. That such extension must not draw on the resources by which the success of the present fire-protection is ensured is a *sine quâ non*; but, beyond this, every consideration is in favour of conferring the same benefits on as many additional areas as possible.

Leaving out of consideration the occurrence of exceptional fires, which numerous observations made by myself and by other Officers have,

moreover, shown to be much less hurtful than was formerly supposed to be the case, experience in almost every Province has shown that, as a rule, the cost of fire-protection lessens with its extension, and that the percentage of success increases as soon as the work in the new tracts becomes sufficiently organized.

It has been recognized on all sides that fire-protection must ultimately embrace all, or at least a very considerable portion of, the State Reserves; and, in my opinion, the time has arrived when a large addition should be made to the areas attempted, which must be increased from time to time as opportunities occur for doing so. I have frequently discussed this question with Colonel Doveton, the Conservator, and other local Officers, and I have come to the conclusion that it is quite feasible to extend the fire-protected area by an average annual addition of 1,000 square miles. The successful results of this measure will, to a great extent, depend on the careful selection of the areas in question.

The protection of extensive reserved areas from fire, without isolating them from the surrounding forests by cleared lines, has not, as yet, succeeded, and seems certainly more difficult than was generally supposed in 1882. The penalties then suggested, of closing the burnt areas against grazing and cutting, lose much of their severity and consequent deterring influence by reason of the general abundance of sources of supply from other than Government Forest Reserves. The desirability of a more general fire-protection is acknowledged on all sides, and measures are under consideration by which it is hoped to extend the advantages to areas which are not specially protected.

Extension of Fire-Protection to Private Forests

45. The extension of fire-protection to forests which are the property of Malguzars is a question of great interest and importance. Such protection would certainly facilitate that of the Government Reserves, add to the value of Malguzari estates, directly benefit the population, and probably be an incalculable indirect benefit to the country at large.

The following information is compiled from the tables in the Meteorological Department regarding the rainfall in the Central Provinces, and shows that the average annual rainfall between 1881 and 1885 has considerably increased above what it was previous to 1875 :—

Station.	Increase, in inches.
Nagpur	14·51
Bhandara	11·57
Chanda	12·20
Brahmapur	7·58
Wardha	16·81
Airi	10·27
Balaghat	8·42
Sironcha	6·58
Jubbulpore	10·42
Seoni	7·07
Mandla	9·50
Badnur	6·09
Chhindwara	10·17
Hoshangabad	18·76
Raipur	7·31
Dhamtari	6·69
Sambalpur	15·85
Bilaspur	11·90

These figures have been considerably reduced in Mr. Blandford's latest Report; but it is, nevertheless, shown that a gradual increase has, of late years, taken place in the rainfall of the Province; and there are good reasons for believing that this circumstance is due to the improvement in the forest growth effected by the abandonment of *dhya* cultivation, which, in former

years, used to lay bare thousands of square* miles, and by the denser forest growth in the large areas brought under fire-protection.

If the truth of the above is borne out by further observations, and is accepted by science, it becomes the duty of Government to extend fire-protection to areas beyond its direct control; and some Officers of high authority believe that the legal power of such interference exists in regard to Malguzari forests.

PROPOSAL VII.

TO EXTEND CULTURAL OPERATIONS ON A MODERATE SCALE.

46. The experience of late years shows that, as a rule, fire-protection and the regulation of cattle-grazing suffice to ensure a perfectly satisfactory regeneration of the forests in the Central Provinces. Not only is the general reproduction and the maintenance of the young forest growth satisfactory, but the character of the *peuplement* shows a considerable improvement, and the admixture of young teak in all forests that contain that species is largely increasing. A most striking contrast exists, as regards reproduction, between the fire-protected and the open forests; but even without the facilities offered to the observer by such comparison, the general character of the young growth strikes the eye, and indicates a considerable and rapid improvement. The healthy straight sapling grows, side by side, with the gnarled representatives of former treatment, and vigorous coppice-shoots take the place of the latter wherever they have been cut back.

Even in over-worked forests—like the Hathibari Reserve, in Bilaspur, which was entirely cut over and cleared of every mature tree, some 28 years ago, by the agent of a Bengal firm—the reproduction is excellent. A teak plantation also exists in this Reserve, and the trees, where planted in suitable localities, average 1 foot in circumference and 38 feet in height. They are 16 years old. The naturally grown teak seedlings have not as yet gained these dimensions: but, on the other hand, occupy a much greater extent of country, sufficiently closely grown to form a complete forest. The Jagmandal Reserve, conveniently situated as regards the market, was also over-cut and partially ruined, but has recovered, and is still daily improving under protection, without necessitating recourse to other measures or artificial reproduction.

On the whole, the areas which are thus sufficiently improved and regenerated by protection only are very considerable, and can be largely increased by the further extension of fire-protection; and, under these circumstances, artificial reproduction—which can, if compared with the vast extent of the forests, at best only affect proportionately small areas—need, at least for years

* The area which used to be annually cut down and burnt for *dhya* cultivation is estimated to have amounted to some 1,200 square miles, and at least 4 to 5 times that area was kept more or less denuded of forest growth. The population which had to abandon *dhya* cultivation in the Government forests amounted to 180,000 families, or nearly 1,000,000 people, as shown in the following table:—

District	Gonds.	Korkús.	Bygas.	Marias.	Total
Nimar	761	9,541		..	10,302
Chhindwarra	140,739	11,081		.	151,820
Betul ...	89,068	32,634		..	121,702
Hoshangabad . .	61,099	28,458	..	..	89,557
Narsinghpur	46,645	2	..	...	46,047
Seoni	145,014	4		...	145,018
Mandla	164,969		11,493		176,462
Bilaspur ...	134,813	30	8,433		143,276
Balaghat			7,737		7,737
Chanda .				30,586	30,586
Total	783,106	81,750	27,663	30,586	923,107

There never was any great trouble in the carrying out of the Government order stopping *dhya* cultivation. The people have, to a great extent, taken to a more permanent method of husbandry, and upwards of 5,000 square miles, which were formerly kept in a barren state, are now more or less forest clad.

to come, be taken into serious consideration only under exceptional circumstances, where large blanks exist, or where it is desirable to introduce more valuable trees into the composition of a forest *peuplement*.

The blanks covered with short grass in the Saonligarh and Rajaborari Reserves were sown and otherwise cultivated in a cheap manner in 1877-78 and 1878-79. In 1882-83 the results were not appreciable, but in 1886 I observed numerous seedlings just topping the grass—in all probability the result of the previous operations. The success is perhaps hardly complete, but certainly sufficient to produce a crop of future seed-bearers on tracts formerly entirely destitute of trees, and this has been achieved at a very small cost, and to a great extent by the unassisted efforts of the Forest Guards. Whenever improvements of this sort can be undertaken in favourable situations, and without hardly any additional expenditure to the State, it seems to me that, on the principle that "every little helps," the opportunity should not be lost, even though the results may be uncertain and partial, and the area affected insignificant if compared with the large extent of naturally reproducing forests.

Blanks covered over with high grass, such as are mainly found in the sâl-producing tracts—as represented by the Kantranala and Banjar Reserves—cannot be cultivated by cheap means, and their restocking must either be left to time, and to the possibility of the forest encroaching on the savannahs in question, and finally occupying them completely, or more expensive methods of cultivation must be had recourse to. In the latter case, it will be advisable, for the sake of economy, to plant belts and clumps of forest on the most favourably situated portions of the blanks referred to, in order to produce seed-bearers where none are now in existence, and thus create more numerous centres from which a natural extension of the forest may take place in the future. It is, of course, essential that such works should only be located in fire-protected forests.

Proposal VIII.

TO INTRODUCE ADDITIONAL CONSERVANCY MEASURES IN FORESTS WORKED UNDER THE COMMUTATION, LICENSE, AND KHAM TAHSIL SYSTEMS.

No important export trade in Forest Produce, but good local market.

47. Hardly any timber is at present exported from the Central Provinces, and the Forest Reserves depend for their market on the local demands of the surrounding country—not only as regards public works and industrial enterprises, but also the requirements of the towns and villages. Rights do not exist, and the consequence is a healthy local market.

Different methods of Exploitation.

48. The different methods of working the forests have gradually grown in accordance with local customs and convenience, and abrupt changes regarding them are therefore undesirable, though they may frequently impede a more sylvicultural and correct working of the forest.

It has already been mentioned, in the Chapter on Working-Plans, that the working of the forests in the immediate future must, to a great extent, be subordinated to existing practices. If inconvenient, these should be gradually modified; but abrupt changes should be avoided, not only with respect to the 2nd class Reserves, but even such forests as may be transferred to the 1st class.

Working by direct Government Agency is, as a rule, forced on us by circumstances, and is profitable and practical only where a considerable market has to be supplied with produce of one or a few kinds. In the Central Provinces, the Banjar sâl forests and the teak forests of Ahiri are the only ones which are worked departmentally, though, occasionally, departmental operations on a small scale are undertaken in other parts of the Province. It may happen that the development of some local enterprise, such as iron-smelting, will open a field necessitating more extended departmental working; or improved means of communication may be the means of making some central market available, in which case departmental agency might again become advantageous. But the present state of the market demands that small quantities of all sorts of commodities shall be supplied in every direction, and, as

such, is totally unsuited to a system of direct working, and nothing practical would be gained by trying to force its extension. The License, the Kham Tahsil, and the Commutation systems are those under which the exploitation of the forests more generally takes place. They are described in Dr. Schlich's Suggestions (paragraphs 57 to 63). The restrictions which are placed on the working of these systems are few and very simple, including the closing of certain blocks for reproduction and improvement in the 1st class Reserves, and the protection of certain species throughout the Forest Reserves of both classes. The improvement of the 1st class Reserves is thus, to a certain extent, ensured; but the protection of trees of certain species only—and it is on this that the 2nd class Reserves are entirely dependent for their improvement—does not always prevent the deterioration of the forests. I observed, no doubt, several instances where the protection of teak alone had caused a large increase of the reserved species; and if it be considered desirable to grow pure forest of this species, then it must be admitted that such areas have improved. I also saw, however, some areas of almost pure teak, which a few years ago had been severely frost-bitten, and others which were rendered leafless by the attack of some insect—a species of *tortrix*—and I cannot help thinking that it is not advisable to grow teak over large areas, without providing for a considerable admixture of other trees. This species does less for the protection and improvement of the soil than almost any other forest tree, and sylviculture demands that it should either be grown in company of other species, or with an undergrowth of bamboos, and the latter circumstance renders a continuous natural reproduction of the trees overhead an object most difficult to attain.

Additional Conservancy measures proposed.

40. The local demands on the forest must increase year by year with a growing population, and if the protection we afford to our forests is, even now, insufficient, it will be all the more so in the future. It is, therefore, unquestionably necessary to introduce into the working, and consequently into our Working-Plans, additional measures whereby to ensure a more strict conservancy.

Selection by Departmental agency of Trees to be felled.

Amongst the foremost of such measures is the direct sale of marked trees selected by the Forest Department. This, as has been correctly pointed out by Mr. Thompson, in his Report on Forest Management in the 2nd class Reserves, must, eventually, supersede the present objectionable practice of permitting license-holders to select their own trees—a selection in which sylvicultural requirements play naturally no part whatsoever. Areas thus treated on the true principles of selection-fellings should, of course, be fire-protected, and grazing within them must be regulated and restricted by periodical closing, or some other means, so as to admit of the desired improvement in the forest growth taking place.

Closure of certain blocks, and Departmental selection of Trees of certain species only.

Even when it is necessary to adhere to a license system, it should frequently be practicable to permit the removal of such trees only as have been selected and marked by the Forest Establishment. Where this is not feasible, the entire closure of certain blocks or compartments must be provided for, and we must, in the areas open to working, be content to regulate the felling and extraction of trees belonging to specially reserved species only.

It is evident that this latter plan—of entirely closing certain areas—will, under ordinary circumstances, rarely result in producing an annual outturn of so high an average as would be the case with forests worked on a more advanced system. Under conditions where the demands of the market are sufficient to test the capabilities of the forests, and it is desirable to work the latter up to their highest power of production, a system of continuous working, providing to the utmost for sylvicultural requirements, must be adopted. In the vast forests of the Central Provinces, there are extensive areas the demand on which is, as yet, far below the supply, and to the whole of these permanent fire-protection cannot at once be extended. Here, periodical closure of parts of the forest will serve all the purposes that it is at present practical to effect, and will sufficiently ensure the future welfare of the forests.

The commutation system must, I think, cease, as a rule, wherever the forests have been brought under closer conservancy, though even, under these circumstances, exceptions may be required in the more remote parts of the country; and it may even be in the interest of the Forest Department to purchase, by concessions, the good-will and active assistance of the semi-savages living in the vicinity of the forests. This is of special importance as regards fire-protection, the success of which is frequently due to people of this class. Under any circumstances, however, the produce to be extracted under commutation licenses should be strictly confined to grass, leaves for thatching, firewood, and other commodities of this kind, without which the people cannot exist, and should not include timber or specially valuable minor forest produce. Mr. Thompson's proposal, that a list should be made of all villages in which the commutation system is considered still to be a necessity, commends itself, as a first step towards the gradual abolition of a method of utilizing the forests which permits of so little practical control.

Commutation system, as a rule, to cease: where necessary, to be regulated.

50. The proposal regarding the leasing of the right to collect and remove minor forest produce will not, I think, inflict any hardship, so long as it is restricted to lac, mohwa, harra, horns, and such other products as are not daily necessaries, but articles of trade.

Proposal to lease the right of collecting Minor Forest Produce.

The annual revenue from minor forest produce would be undoubtedly increased by a step such as that proposed. Mr. Thompson's proposals—those contained in paragraphs 73 to 98 of his Report—regarding the working of the 2nd class Reserves, are very practical, and it should be considered how far they can be adopted for the 1st class Reserves as well.

51. The system under which a forest should be worked must depend on its importance and value, and on the demand that is made on its resources, and not on any distinction such as that between 1st and 2nd class Reserves, which is, by its nature, entirely artificial.

The system on which a Forest is to be worked depends on its importance only.

These remarks apply not only to the supply of timber and firewood, but to grazing as well. The forests in the Central Provinces must, under existing conditions, provide a certain amount of pasture, and it is necessary, therefore, to manage them with due consideration for this circumstance. In those which have to supply the most urgent demands in respect of other kinds of forest produce, grazing should be more strictly controlled and limited. Here, again, it would be wrong to base the degree of restriction to be enforced on the artificial distinction existing between the 1st and 2nd class Reserves. A considerable area, probably amounting at a time to a moiety of all the Reserves, will have to be kept completely closed to cattle; but this restriction must be entirely regulated by the requirements of each district, and of each separate forest.

52. There seems to be no doubt that the Government Reserves are, in many instances, made to supply an undue proportion of the grazing required by the Province, and that the Malguzars frequently preserve the grass on their own forest estates, while continuing to graze on Government forest land both their own cattle and such as belong to their raiyats. This circumstance is entirely owing to the fact that our existing grazing rates are too low, when compared with the present value of the produce, and is, moreover, objectionable, since the private forest proprietors only protect their property in this one respect, and adopt no other measures for preventing its deterioration. The whole forest area of the Province is, as yet, well able to support the existing herds of cattle, but a more even distribution of the latter is desirable; and this should be regulated by the sylvicultural necessities of each forest tract, and by the introduction of varying, but higher, rates of grazing dues.

Undue pressure on Government Reserves as regards Grazing.

53. In paragraph 112 of his Report, Mr. Thompson shows that the prices at present charged for forest produce of all kinds, extracted from Government forests, are much too low, and, moreover, quite out of proportion to the actual market value of such commodities. He proposes, in consequence, that the

Rates for Forest Produce require revision.

rates should be considerably enhanced. Tables of rates are appended to Mr. Thompson's Report, and these show the present, as well as the proposed, charges, district by district.

An enhancement of the rates at present paid is doubtless quite just, and will serve to materially increase the Forest Revenue of the Province; but it is essential that they should vary with the distance of the forests from the markets, and with their accessibility. The rates must be lower for forests far removed, and higher for those in the immediate vicinity of the market; higher, also, for those opened out by a good system of roads. As regards the forests which, for the time being, we propose still to maintain as 2nd class Reserves, it may be advisable to accept, for the present, Mr. Thompson's contemplated rates as they stand, since the establishment is insufficient to control a method involving varying rates. But in order that the forests included in the 1st class may be brought under a more intense management, the prices should at once be made to vary in accordance with the value of the produce *in loco*, and not be fixed in accordance with bazaar prices.

This naturally affects—at least in a general way—grazing rates less than it does rates for other forest produce, though pasture in a forest whence the cattle can return at night, or whence the milk can be carried into the market, is of infinitely greater value than under conditions which do not admit of such facilities.

A more even Utilization of all Forest Areas must be effected.

54. The selection of forests for special treatment and protection in remote localities, and a fixed scale of rates for forest produce, independent of the relative position of forest and market, naturally results in concentrating the demand on the nearest and most easily accessible localities, and this circumstance has caused the deterioration of many valuable forest tracts. These are mistakes which are gradually being recognized, and active efforts must be made, in the direction indicated, for securing a more evenly distributed utilization of the forest area, for, without such, the market will—especially under the license system—continue to tap only the outer belt of the forests, leaving the interior unexploited and turning to waste.

Opening out of Forests by Roads.

55. Such forest protection, and conservative management, as is effected by a departmental selection and marking of trees to be felled, by the closing of over-worked or specially exposed forest blocks, and by the regulation of rates for forest produce, must be assisted by opening out the less accessible, or more remote, forests, by means of roads—both within the forests and outside their limits. The scarcity of good cart-roads in the Central Provinces is most striking, and the effect of this is everywhere discernible. Whilst marching through the Chhattisgarh plain, I observed no consumption of forest-produce within twenty miles from the boundaries of forests that are well able to meet the demand. Local Officers partially attribute this circumstance to the absence of middlemen ready to undertake the supply; but I feel sure that these traders in forest produce would soon be found, if it was not for the utter want of roads leading from the forest to the market. Where roads exist, or have been opened out of late years, an active demand for forest produce is an almost certain accompaniment. When the facilities for extraction are increased, the prices charged can be raised in proportion. The cutting and carting of grass from the forest tracts situated between the Mahanadi and Joke rivers is a most active trade, in which numerous carts are employed. The grass is tied firmly into small bundles, and the compactness and accuracy with which the latter are loaded is simply admirable. At Umret, in the Chhindwara District, I observed that the opening out of a new road had shifted the demand from a near forest to one formerly less accessible, but richer.

The construction of roads, with the view of opening out the interior of the forests, falls naturally within the province of the Forest Department, and it will be necessary that, for a time at least, a considerable allotment be provided in the Budget for this purpose. It is, however, essential that this work should be undertaken systematically and on a preconsidered plan. Every Working-Plan should contain provisions for the gradual, but systematic, opening out of

the forests. The development of the Province has been steadily progressing, and I believe it need not be apprehended that forest roads will be allowed to stop short at the forest boundary, still less so if all forests in each district are subject to the control of the District Officer.

Building of Rest-Houses and Quarters for Establishments.

56. Besides facilitating the regulation and distribution of the working of the forests, a good system of roads aids in their supervision and protection. With special regard to this, it is also essential that the Executive and Protective Establishments should be suitably housed in the vicinity of the forests, and that more rest-houses should be built for the district and inspecting Forest Officers. There are some rest-houses, of which I saw three in Motinala, Banjar, and Jagmandal, and that serve every purpose; but they are too few and far between, and their number might with advantage be increased.

The forests in the Central Provinces are, at certain seasons of the year, decidedly unhealthy, and the exposure during the months devoted to fire-protection tells on the strongest constitution. A moderate expenditure on forest huts and rest-houses is, therefore, an unquestionably good policy. It will tend to make the service easier, healthier, and more popular, and must result, by these means, in a financial saving.

OFFICE ESTABLISHMENT.

Increase of Office Establishment.

57. The present permanent Office Establishment of the Central Provinces entails an annual expenditure of Rs. 10,044, and the temporary Office Establishment Rs. 16,896: total, Rs. 26,940. In lieu of this, the Conservator proposes the following:—

	Rs.
Permanent	24,768
Temporary	11,844
Total ...	36,612

being an increase per annum of Rs. 9,672.

These proposals appear to me to be exceedingly moderate, and such as we should, considering the vast area of the forests under work, and the increasingly large surplus yielded by the same, unhesitatingly approve of.

The Central Provinces include a forest area of not less than 19,000 square miles. The sanctioned average establishment for such an area as this in the North-Western Provinces would be in the proportion of permanent Rs. 80,000, temporary Rs. 80,000, the Divisions there not exceeding 275 square miles, each, in average extent. Circumstances do not render necessary so minute a sub-division as the above in the case of the Central Provinces; but this does not militate against the fact that the requirements of Colonel Doveton, in the case of each individual Division, compare extremely favourably with what we see in the North-Western Provinces—*viz.*, Rs. 2,000 per Division per annum, against Rs. 2,400 in Circles, where the areas of the Divisions are to those in the Central Provinces as $\frac{1}{4}$ is to 1.

SUMMARY OF SUGGESTIONS.

58. The following is a summary of such suggestions as I have attempted to justify, from an administrative point of view, in the foregoing paragraphs:—

(*a*) That the area under stricter conservancy be increased, by the systematic transfer of Reserves of the 2nd class to those of the 1st class; that 3,200 square miles be thus at once transferred, as proposed by Mr. Thompson, seconded by the Conservator, and—I understand—generally approved of by the Chief Commissioner (paragraphs 4 to 15).

(*b*) That, hereafter, such transfers be completed, District by District, beginning with the Nerbudda Division (paragraph 15).

(*c*) That, finally, all forests in a District be under the executive control of the Deputy Commissioner, such control being curtailed by the provisions of Working-Plans and preliminary Plans-of-Operations, and

exercised under the proviso that no action in Forest matters be taken except through the District Forest Officer (paragraph 16).

(*d*) That, till the transfer of all forests in a District has taken place, the present arrangement be maintained, under which the 1st class Reserves are under the absolute control of the Conservator of Forests and his Officers (paragraph 17).

(*e*) That the management of the existing 1st class Reserves, and those that it is proposed to transfer at present, be organized without delay, as regards establishments, demarcation surveys, working-plans, and preliminary plans-of-operations (paragraphs 18 to 27).

(*f*) That sanction be, therefore, obtained without delay to the following increase of Establishment :—

4 Sub-Assistant Conservators.
16 Forest Rangers.
96 Foresters.
529 Forest Guards.

(Paragraphs 28 and 29).

(*g*) That the demarcation and rectification of the boundaries be continued on the present lines (paragraphs 30 to 33).

(*h*) That a Branch of the Imperial Forest Survey be deputed to the Central Provinces in 1887-88, that for this purpose an Officer of the Controlling Staff be deputed to the Imperial Forest Survey during the season of 1886-87, and that a new appointment be sanctioned for the Controlling Staff on this account (paragraph 34).

(*i*) That a Working-Plans Division be organized at once, and that, for this purpose, an additional appointment be sanctioned on the Controlling Staff (paragraphs 35 to 39).

(*k*) That fire-protection, by means of isolation, be largely increased, and that, year by year, considerable areas, averaging 1,000 square miles per annum, be added to the tracts of fire-protected Reserves (paragraphs 40 to 44).

(*l*) That the question be considered as to how fire-protection can be extended to Malguzari Forests (paragraph 45).

(*m*) That planting operations be carried out on a small scale (paragraph 46).

(*n*) That the system by which license-holders select the trees they wish to remove, be gradually superseded by the method of departmental selection and marking (paragraph 49).

(*o*) That where this is not possible, and in forests to which fire-protection cannot as yet be extended, certain areas be periodically closed (paragraph 49).

(*p*) That the commutation system be restricted as far as possible (paragraph 49).

(*q*) That the right to collect minor forest produce—not daily necessaries—be sold by public auction (paragraph 50).

(*r*) That the rates chargeable for forest produce be enhanced, but on a scale made to vary with the distance and accessibility of each forest (paragraph 53).

(*s*) That the forests be systematically opened out by roads (paragraph 55).

(*t*) That the Forest Establishment be suitably housed in the vicinity of the forests, and that rest-houses be built for that purpose (paragraph 56).

(*u*) That the Office Establishments be increased (paragraph 57).

FINANCIAL.

59. The acceptance of the above proposals would involve the following increase in the annual expenditure of the Province :—

Cost of proposals.

	Per mensem.	Per annum.
	Rs.	Rs.
The sanction for 2 Officers on the Controlling Staff will cost ...	1,100	13,200

The scale which must be adopted is at least one Deputy Conservator of the 3rd grade and one Assistant Conservator of the 1st grade, or two Deputy Conservators of the 4th grade. Any other arrangement would tend to an undue lowering of the average scale of pay, and the Officer in charge of the Working-Plans Division should, as a rule, be an Officer of some standing in the Department.

The sanction required for the additional permanent Executive Staff proposed stands as follows :—

No.	Rank.	Per mensem.	Per mensem.	Per annum.
		Rs. a. p.	Rs. a. p.	Rs. a. p.
4	Sub-Assistant Conservators at ...	187 5 0	749 4 0	8,991 0 0
16	Forest Rangers	70 6 0	1,126 0 0	13,512 0 0
96	Foresters...	23 4 0	2,232 0 0	26,784 0 0
520	Forest Guards	7 3 0	3,802 3 0	45,620 4 0
	Total ...	...	7,909 7 0	94,913 4 0

	Rs. A. P.
The proposed increase in the permanent Office Establishment will cost ...	14,724 0 0
Total ...	1,22,837 4 0

Against this there will be the following decrease on account of reductions in the temporary establishments :—

No.	Rank.	Per mensem.	Per mensem.	Per annum.
	Forest Establishment.	Rs.	Rs.	Rs.
1	Daroga @	40	40	480
69	Jamadars and Daffadars @	13	897	10,764
526	Muharrirs and Chaprasis @	5	2,630	31,560
		...	3,567	42,804
	Office Establishment	...	...	5,052
	Total ...	...	...	47,856

	Rs.
The total increase required amounts, therefore, to ...	74,081-4

60. It has been clearly shown by Colonel Doveton that the financial position of the Forest Department in the Central Provinces warrants a large additional expenditure on Establishments. In fact, the maintenance of the stability of the Revenue demands such outlay.

Justification of proposed Cost.

I copy Colonel Doveton's table showing the Receipts and Charges for four periods of four years each, as follows :—

Periods.	Expenditure.	Gross Income.	Net Income.	Increase in Gross Income.	Increase in Net Income.
	Rs.	Rs.	Rs.	Rs.	Rs.
1869-70 to 1872-73 ...	12,00,105	19,09,341	7,09,236	...	...
1873-74 to 1876-77	12,37,199	26,16,807	13,79,608	6,47,466	6,70,372
1877-78 to 1880-81 ...	17,29,177	33,93,034	16,64,157	7,76,827	2,84,549
1881-82 to 1884-85 ...	18,41,139	41,72,502	23,31,363	7,78,868	6,67,206
Total ...	60,07,920	1,21,53,284	60,81,364	...	...

The net income per annum during the first period—from 1869-70 to 1872-73—amounted to Rs. 1,77,309 ; during the second period to Rs. 3,44,902 ; during the third period to Rs. 4,16,039 ; and for the last period—from 1881-82 to 1884-85—to Rs. 5,82,841.

I append (Appendix C) tables showing, in detail, the financial transactions of the Central Provinces Forest Department for the last two periods of 5 years. It will be seen that upwards of 82°/₀ of the gross Revenue is realized from forest produce removed by consumers and purchasers. This system requires a proportionately large staff, not merely for the protection of the forests, but for the realization and control of Forest Revenue as well. In the School Circle of the North-Western Provinces, an increase in the Executive and Protective Staff was followed by an immediate increase of Forest Revenue, which had been stationary for some years ; and there is not the slightest doubt that a similar policy would lead to the same results in the Central Provinces. An increase of the kind contemplated would also admit of the protection and development of new forest areas, especially in the Chhattisgarh Division.

A large increase in the Forest Revenue may also be expected from railway extensions, the construction of roads, and the development of means of communication generally.

Large increase in Revenue consequent on the acceptance of Mr. Thompson's proposals.

61. There can be no doubt that the proposed increase in the expenditure will be financially profitable within the near future, even if the present low rates for forest produce remain in force for the time being.

Mr. Thompson, however, in his Report on the Forest Management of the 2nd class Reserves, shows conclusively, as already pointed out, that the rates at present charged for forest produce are disproportionately small, when compared with the market value of the commodities in question. These sanctioned scales of rates were drawn up years ago, and have never since been changed, although every other condition has materially altered. The rates proposed by Mr. Thompson include an increase, amounting, in some instances, to 100°/₀.

The annexed tables show that 82°/₀ of the gross income would be affected by the proposed increase in the rates. If, therefore, the present recommendations are approved of—even to the extent of an average enhancement of rates equivalent to 25°/₀—then the Revenue would, in the course of a few years, increase by $\frac{82}{100-4}$, or by 20·5°/₀. This would amount—basing our calculations on the average gross Revenue of the last four years, and which aggregates Rs. 10,43,000—to upwards of Rs. 2,00,000 per annum.

INCREASE IN THE CAPITAL VALUE OF THE FORESTS OF THE CENTRAL PROVINCES.

Increase in value of growing Stock.

62. The increase in the value of the growing stock is everywhere so striking—and this is particularly the case with the fire-protected forests of the Province—that we are justified in promoting this general improvement by every means in our power, even at the expense of money that should yield no immediate

return. We have seen, however, from foregoing statements in this review, that there is every prospect of a present outlay being immediately followed by correspondingly large profits.

It is quite impossible to gauge the increase in capital value referred to, without having recourse to valuation surveys of the most elaborate kind; and, even then, much would remain that could not well be compared with pre-existing conditions. Suffice it to say now that what was described 15 years ago as land useless for forest purposes, as tracts containing nothing but "sheet" rock, etc., etc., are now covered over with promising young trees, whilst over-worked and partially ruined forests have been restored in such a way as to be no longer recognizable.

Everywhere promises of future gain attract the eye, and riches that are beyond our means of calculation, since, with each year of protection, the soil improves in its productive powers; and this improvement is, of course, shown in a corresponding measure in the vegetation that the soil supports.

The presence, in even the more deteriorated forests, of stumps of teak exceeding 6 feet in girth shows what we have here a right to expect, and points to the road that we should follow in order to attain the desired end. Referring to the Makundpore Forest in Rewah (Central India), Mr. McKee observes:

> This must have been a very valuable forest in the past, as, from the presence of numbers of teak stumps measuring from 5 feet to 8 feet in girth, it would appear to have contained a large portion of mature timber trees * * * * * But the forest, as it stands, still contains the nucleus of a valuable estate in the future.

We have, in the Central Provinces, 4,000 square miles of teak-producing forest, representing, under proper conditions of protection, a mine of future wealth.

Appendix A.

Statement showing the present strength of Subordinate Conservancy Establishment, and the average area per man of each class.

Division and District.	Area, in Square Miles, of Reserved and Unreserved Forests.			Subordinate Executive and Protective Establishments.													Average area, in Square Miles, supervised per man of each grade of the Executive Establishment.			Remarks.
				Permanent.				Temporary.				Total.								
	Reserved.	Unreserved.	Total.	Forest Rangers.	Foresters.	Forest Guards.	Total.	Darughas.	Jemadars, Duffadars, Moharirs, &c.	Watchers.	Total.	Rangers and Darughas.	Foresters, Jemadars, Duffadars, Moharirs, and Licensee-renters.	Forest Guards and Watchers.	Total.	Ranger and Darogha.	Foresters, Jemadars, Duffadars, and Moharirs.	Forest Guards and Watchers.	
Nimar	2,063	...	2,063	4	5	17	26	1	11	140	152	5	16	157	178	4,126	128·93	13·14	A
Mandla	351	...	351	1	7	37	45	...	...	...	...	1	7	37	45	351	50·14	9·41	B
Hoshangabad	466	...	466	1	6	17	24	...	8	35	43	1	14	52	67	466	33·28	8·96	B
Betúl	277	...	277	1	2	9	12	...	1	8	9	1	3	17	21	277	92·33	16·29	B
Chanda	459	95	554	2	5	17	24	...	15	50	65	2	20	67	89	277	27·7	8·27	B
Seoni	468	...	468	2	7	21	30	...	3	22	25	2	10	43	55	234	46·8	10·88	B
Sangor	66	...	66	1	3	11	15	...	3	7	10	1	6	18	25	66	11·0	3·67	B
Wardha	51	...	51	...	3	5	8	...	...	8	8	...	3	13	16	...	17·0	3·92	B
Ráipúr	9	...	9	...	1	4	5	..	...	...	...	...	1	4	5	...	9·0	2·25	B
Total ...	2,147	95	2,242	8	34	121	163	...	30	130	160	8	64	251	323	28,025	35·03	8·14	B
Nagpúr	390	8	398	1	...	1	2	...	12	66	78	1	12	67	80	398	33·16	5·94	C
Bhandara	551	...	551	...	...	...	...	1	12	65	78	1	12	65	78	551	45·91	8·48	C
Chanda	2,909	...	2,909	1	1	6	8	...	80	47	127	1	d. 81	53	135	2,909	35·91	54·89	C
Wardha	149	..	149	1	...	1	2	...	4	38	42	1	4	39	44	149	37·25	3·82	C
Balaghat	960	74	1,034	1	...	1	2	1	23	75	99	2	23	76	101	517	44·95	13·60	C
Jubbulpore	329	...	329	1	...	1	2	...	5	28	33	1	5	29	35	329	65·8	11·34	C
Sangor	742	...	742	...	...	1	1	...	19	106	125	...	19	107	126	...	39·05	6·93	C
Damoh	836	22	853	1	...	1	2	...	9	123	132	1	9	124	134	858	95·33	6·92	C
Mandla	2,188	...	2,188	1	...	1	2	...	15	93	108	1	15	94	110	2,188	145·86	23·23	C
Seoni	554	196	750	1	...	1	2	...	14	65	79	1	14	66	81	750	53·57	11·36	C
Betúl	852	...	852	..	...	...	...	1	39	25	65	1	e. 39	25	65	852	21·85	34·08	C
Chhindwarra	641	9	650	...	...	...	...	1	9	64	74	1	9	64	74	650	72·22	10·16	C
Hoshangabad	1,185	...	1,185	1	1	...	2	...	11	107	118	1	12	107	120	1,185	98·75	11·07	C
Narsinghpúr	193	...	193	...	...	1	1	1	5	22	28	1	5	23	29	193	38·06	8·39	C
Raipúr	1,377	...	1,377	1	...	1	2	...	12	76	88	1	12	77	90	1,377	114·75	17·87	C
Sambalpúr	715	...	715	...	...	...	...	1	6	91	98	1	6	91	98	715	119·16	7·86	C
Bilaspúr	649	...	649	...	...	...	...	1	4	45	50	1	4	45	50	649	162·25	14·42	C
Total ...	15,220	309	15,529	10	2	16	29	7	279	1,136	1,422	17	281	1,152	1,450	913·47	55·26	13·48	C
Grand Total ...	19,430	404	19,834	22	41	154	217	8	320	1,406	1,734	30	361	1,560	1951	661·10	54·94	12·71	

A. The forests in Nimar are divided into Ranges, irrespective of whether they are 1st or 2nd class reserves; hence it is necessary to keep the relation of establishment to area in this case separate. These are very large areas in compact blocks.

B. The figure d under B may be taken in connection with the 1st class Reserves only in the 8 Districts specified.

C. The figures against C refer to 2nd class Reserves only in the 17 Districts mentioned.

d. Includes 62 men stationed at checking stations, proposed to be converted into patrolling establishment.

e. Includes 23 paid vendors of licenses.

Appendix B.

FIRE-PROTECTION IN THE CENTRAL PROVINCES.

DETAILS OF BLOCKS.

HATHIBARI.

Year.	Attempted.	Failed.	Protected.	Cost.
	Acres.	Acres.	Acres.	Rs. a. p.
1870-71	2,123	...	2,123	654 5 11
1871-72	2,123	...	2,123	678 8 1
1872-73	2,123	...	2,123	218 13 9
1873-74	2,123	...	2,123	147 11 9
1874-75	2,123	...	2,123	237 13 3
1875-76	2,123	...	2,123	139 6 0
1876-77	2,123	...	2,123	75 0 0 144 2 11
1877-78	2,123	...	2,123	135 10 8
1878-79	2,123	...	2,123	93 9 0
1879-80	2,123	640	1,483	115 11 3
1880-81	2,123	...	2,123	88 8 0
1881-82	2,123	...	2,123	81 4 8
1882-83	2,123	...	2,123	86 12 8
1883-84	2,123	...	2,123	71 5 2
1884-85	2,123	...	2,123	87 1 6
TOTAL .	31,845	640	31,205	3,085 7 7

KANTRANALA.

Year.	Attempted.	Failed.	Protected.	Cost.
1876-77	3,548	..	3,548	34 4 0
1877-78	3,548	3,548	...	42 7 3
1878-79	3,548	1,182	2,366	20 8 0
1879-80	3,548	3,548	...	15 11 3
1880-81	2,366	...	2,366	106 2 10
1881-82	3,548	3,548	...	53 8 8
1882-83	3,548	2,883	665	69 12 4
1883-84	..	...	...	.....
1884-85	3,548	...	3,548	154 3 1
TOTAL .	3,548	...	3,548	496 9 5

PANJAR VALLEY.

Year.	Attempted.	Failed.	Protected.	Cost.
1875-76	49,725	...	49,725	444 13 1
1876-77	49,725	...	49,725	524 2 2 339 13 5
1877-78	49,495	5,057	44,438	481 5 1
1878-79	49,494	1,145	48,349	406 14 8
1879-80	49,495	37,120	12,375	434 7 5
1880-81	49,495	450	49,045	655 14 5
1881-82	49,495	5	49,490	589 4 2
1882-83	49,495	...	49,495	596 14 1
1883-84	49,724	19	49,705	721 1 2
1884-85	49,724	26	49,698	743 1 4
TOTAL .	495,867	43,822	452,045	5,037 11 0

MOTINALA.

Year.	Attempted.	Failed.	Protected.	Cost.
1875-76	1,658	...	1,658	Nil.
1876-77	1,658	87	1,571	82 13 0
1877-78	1,659	252	1,407	52 12 6
1878-79	1,659	...	1,659	45 8 7
1879-80	1,659	...	1,659	49 10 0
1880-81	1,659	...	1,659	48 14 10
1881-82	1,659	...	1,659	56 10 0
1882-83	1,659	...	1,659	51 14 3
1883-84	1,658	...	1,658	78 7 4
1884-85	1,658	...	1,658	70 4 9
TOTAL .	16,586	339	16,247	541 15 8

PIPALKOTA.

Year.	Attempted	Failed.	Protected.	Cost.
	Acres.	Acres.	Acres.	Rs. a. p.
1881-82	1,280	...	1,280	.....
1882-83	1,280	...	1,280	.....
1883-84	1,280	...	1,280	10 0 0
1884-85	1,280	...	1,280	10 15 0
TOTAL .	5,120	...	5,120	20 15 0

JAGMANDAL.

Year.	Attempted.	Failed.	Protected.	Cost.
1867-68	35,200	...	35,200	2,948 9 2
1868-69	35,200	...	35,200	2,948 9 2
*1869-70	35,200	...	35,200	2,948 9 2
1870-71	35,200	...	35,200	2,948 9 2
1871-72	35,200	...	35,200	1,614 1 2
1872-73	35,200	...	35,200	937 9 10
1873-74	35,200	...	35,200	841 7 11
1874-75	35,200	10,697	24,503	808 0 8
1875-76	24,503	...	24,503	484 15 5
1876-77	24,503	10	24,493	835 8 0
1877-78	24,503	242	24,261	351 2 1
1878-79	24,503	306	24,197	391 15 8
1879-80	24,503	246	24,257	421 0 1
1880-81	24,503	120	24,383	413 7 8
1881-82	24,503	163	24,340	540 4 3
1882-83	24,503	1,600	22,903	613 1 4
1883-84	24,503	31	24,472	604 12 9
1884-85	24,503	...	24,503	638 13 0
TOTAL .	526,630	13,415	513,215	21,350 8 6

CHUHARIGOGARH.

Year.	Attempted.	Failed.	Protected.	Cost.
1867-68	3,200	...	3,200	3,196 14 4
1868-69	3,200	...	3,200	
1869-70*	3,200	...	3,200	
1870-71	3,200	...	3,200	
1871-72	3,200	...	3,200	577 5 9
1872-73	3,200	...	3,200	150 4 10
1873-74	3,200	1,540	1,660	142 12 6
1874-75	1,660	...	1,660	118 14 6
1875-76	1,660	...	1,660	102 9 0
1876-77	1,661	...	1,661	116 11 9 60 7 5
1877-78	1,661	...	1,661	67 8 9
1878-79	1,661	...	1,661	65 9 0
1879-80	1,661	8	1,653	75 1 2
1880-81	1,661	...	1,661	68 14 11
1881-82	1,661	...	1,661	71 5 0
1882-83	1,661	...	1,661	73 7 4
1883-84	1,660	...	1,660	81 11 4
1884-85	1,660	...	1,660	76 11 0
TOTAL .	40,667	1,548	39,119	5,046 4 7

AIRI.

Year.	Attempted.	Failed.	Protected.	Cost.
1878-79	2,150	2,150	.....	8 4 9
1879-80	2,150	...	2,150	10 12 0
1880-81	2,150	3	2,147	20 5 0
1881-82	2,150	...	2,150	39 3 9
1882-83	2,150	...	2,150	43 4 9
1883-84	2,150	137	2,013	52 14 10
1884-85	2,150	...	2,150	50 9 5
TOTAL .	12,900	140	12,760	225 6 6

* Paragraph 46 of Provincial Forest Administration Report for 1871-72.

BARELA.

Year.	Attempted.	Failed.	Protected.	Cost.
	Acres.	Acres.	Acres.	Rs. A. P.
1872-73 ...	6,446	...	6,446	171 12 6
1873-74 ...	6,446	...	6,446	241 7 4
1874-75 ...	6,446	...	6,446	233 11 3
1875-76 ..	6,446	...	6,446	109 6 11
1876-77 ...	7,153	7	7,146	194 14 6
1877-78 ...	7,153	...	7,153	112 6 9
1878-79 ...	7,153	29	7,124	116 1 6
1879-80 ...	7,153	7,153	...	74 15 10
1880-81 ...	7,153	...	7,153	120 3 4
1881-82 ...	7,153	...	7,153	152 5 0
1882-83 ..	7,153	156	6,997	162 6 2
1883-84 ...	7,153	...	7,153	195 14 7
1884-85 ...	7,153	...	7,153	198 11 5
TOTAL ...	35,765	156	35,609	2,084 5 1

SINGRAMPUR.

1871-72 ...	6,555	...	6,555	362 10 11
1872-73 ...	6,555	...	6,555	190 13 0
1873-74 ...	6,555	...	6,555	260 15 6
1874-75 ..	6,555	600	5,955	228 11 11
1875-76 ...	6,555	...	6,555	170 8 6
1876-77 ...	6,555	10	6,545	121 1 8
1877-78 ...	6,555	...	6,555	170 13 0
1878-79 ...	6,555	...	6,555	133 9 4
1879-80 ...	6,555	...	6,555	131 7 8
1880-81 ...	6,555	...	6,555	121 13 4
1881-82 ...	6,555	5	6,550	134 12 9
1882-83 ...	6,555	...	6,555	167 11 9
1883-84 ...	6,555	...	6,555	156 9 8
1884-85 ...	6,555	3	6,552	160 13 10
TOTAL ...	91,770	618	91,152	2,521 8 10

BIJERAGOGARH.

1871-72 ...	20,480	...	20,480	599 0 2
1872-73 ...	20,480	...	20,480	312 13 9
1873-74 ...	20,480	...	20,480	212 12 10
1874-75 ...	21,188	...	21,188	341 8 1
1875-76 ...	21,188	...	21,188	577 1 0
1876-77 ...	21,188	...	21,188	685 15 10
1877-78 ...	21,188	...	21,188	566 0 3
1878-79 ...	21,188	...	21,188	497 13 0
1879-80 ...	21,188	...	21,188	441 7 1
1880-81 ...	21,188	...	21,188	418 9 6
1881-82 ...	21,188	...	21,188	487 5 3
1882-83 ...	21,188	...	21,188	481 13 6
1883-84 ...	21,188	40	21,148	513 13 4
1884-85 ...	21,188	...	21,188	540 12 6
TOTAL ...	294,508	40	294,468	6,746 14 1

KALIBHIT.

1874-75 ...	7,080	...	7,080	20 0 0
1875-76 ...	11,520	500	11,020	102 2 8
1876-77 ...	14,080	646	13,434	106 10 2
1877-78 ...	62,080	60,000	2,080	84 6 1
1878-79 ...	62,080	5	62,075	190 6 2
1879-80 ...	62,080	80	62,000	278 10 0
1880-81 ...	62,080	7	62,073	289 13 9
1881-82 ...	62,080	269	61,811	254 15 9
1882-83 ...	62,080	122	61,958	335 6 3
1883-84 ...	62,080	4	62,076	331 10 10
1884-85 ...	62,080	12	62,068	357 1 4
TOTAL ...	529,920	61,645	468,275	2,351 3 0

PUNASA.

1872-73 ...	7,680	...	7,680	36 0 0
1873-74 ...	7,680	7,680	...	100 0 0
1874-75 ...	17,400	17,400	...	290 4 6
1875-76 ...	34,100	1,640	32,460	680 14 8
1876-77 ...	43,700	4,100	39,600	311 8 8
1877-78 ...	54,580	2,800	51,780	400 4 4
1878-79 ...	63,580	620	62,960	719 6 1
1879-80 ...	72,080	7,080	65,000	807 14 7
1880-81 ...	81,040	20,055	60,985	918 10 11
1881-82 ...	91,720	84,610	7,110	954 8 4
1882-83 ...	91,920	4,616	87,304	1,026 9 5
1883-84 ...	91,920	138	91,782	795 7 8
1884-85 ...	91,920	18,840	73,080	1,206 1 5
TOTAL ...	716,560	144,499	572,061	8,247 14 7

LOWER GOUR.

Year.	Attempted.	Failed.	Protected.	Cost.
	Acres.	Acres.	Acres.	Rs. A. P.
1881-82 ...	2,000	...	2,000	71 14 9
1882-83 ...	2,000	...	2,000	73 2 7
1883-84 ...	5,517	...	5,517	101 10 10
1884-85 ...	5,517	...	5,517	250 0 7
TOTAL ...	15,034	...	15,034	496 12 9

SAONLIGARH.

1875-76 ...	17,920	3,200	14,720	339 9 4
1876-77 ...	48,840	80	48,760	373 12 9
1877-78 ...	48,840	6,027	42,813	243 4 0
1878-79 ...	61,440	810	60,630	275 13 9
1879-80 ...	70,251	1,700	68,551	316 7 2
1880-81 ...	78,080	...	78,080	312 5 7
1881-82 ...	78,080	13,440	64,640	301 11 7
1882-83 ...	78,080	804	77,274	629 0 2
1883-84 ...	78,080	960	77,120	1,151 5 11
1884-85 ...	78,080	68	78,012	1,168 14 4
TOTAL ...	637,691	27,091	610,600	5,112 4 7

BORI.

1865-66 ...	23,680	...	23,680	847 11 8
1866-67 ...	23,680	...	23,680	847 11 8
1867-68 ...	23,680	...	23,680	847 11 8
1868-69 ...	23,680	...	23,680	847 11 8
1869-70 ...	23,680	...	23,680	847 11 8
1870-71 ...	23,680	...	23,680	847 11 9
1871-72 ...	23,680	...	23,680	1,723 11 2
1872-73 ...	23,680	...	23,680	876 2 10
1873-74 ...	23,680	...	23,680	699 5 6
1874-75 ...	23,680	...	23,680	773 1 3
1875-76 ...	23,680	680	23,000	600 3 0
1876-77 ...	23,680	...	23,680	1,019 4 10
1877-78 ...	23,680	1,600	22,080	615 2 0
1878-79 ...	23,680	200	23,480	552 10 7
1879-80 ...	39,480	200	39,280	1,010 2 4
1880-81 ...	39,680	...	39,680	723 4 10
1881-82 ...	39,680	2,880	36,800	673 4 3
1882-83 ...	39,680	120	39,560	571 12 0
1883-84 ...	39,680	...	39,680	913 10 2
1884-85 ...	39,680	...	39,680	776 12 4
TOTAL ...	569,400	5,680	563,720	16,614 13 2

RAJABORARI.

1875-76 ...	14,080	6,500	7,580	302 9 11
1876-77 ..	63,540	...	63,540	653 1 0
1877-78 ...	94,260	3,770	90,490	425 14 8
1878-79 ...	96,000	3,853	92,147	463 10 7
1879-80 ...	102,125	2,280	99,845	549 1 11
1880-81 ...	102,720	80	102,640	509 1 3
1881-82 ...	102,720	650	102,070	518 11 2
1882-83 ...	102,720	600	102,120	703 9 10
1883-84 ...	102,720	10	102,710	1,805 8 7
1884-85 ...	102,720	...	102,720	1,768 14 5
TOTAL ...	883,605	17,743	865,862	7,760 3 4

CHANDGARH.

1877-78 ...	61,440	37,040	24,400	158 8 1
1878-79 ...	61,440	36,490	24,950	313 13 9
1879-80 ...	61,440	12,555	48,885	391 15 4
1880-81 ...	61,440	30,520	30,920	882 7 7
1881-82 ...	61,440	7,295	54,145	697 15 4
1882-83 ...	61,440	268	61,172	536 1 3
1883-84 ...	61,440	31,690	29,750	573 6 2
1884-85 ...	61,440	2,928	58,512	827 8 0
TOTAL ...	491,520	158,786	332,734	3,861 11 6

KHANDWA.

1877-78 ...	29,440	140	29,300	431 10 0
1878-79 ...	35,840	1,246	34,594	562 10 0
1879-80 ...	35,840	772	35,068	795 2 2
1880-81 ..	35,840	80	35,760	968 3 3
1881-82 ...	35,840	2,256	33,584	638 2 5
1882-83 ...	35,840	1,152	34,688	641 1 5
1883-84 ...	35,840	457	35,383	496 12 7
1884-85 ...	35,840	...	35,840	805 3 0
TOTAL ...	280,320	6,103	274,217	5,338 12 10

BAINPURA.

Year.	Attempted.	Failed.	Protected.	Cost.
	Acres.	Acres.	Acres.	Rs. a. p.
1879-80 ...	600	...	600	42 0 0
1880-81 ...	600	...	600	8 9 0
1881-82 ...	600	...	600	12 0 0
1882-83 ...	600	...	600	11 1 6
1883-84 ...	600	...	600	24 0 0
1884-85 ...	600	...	600	31 3 2
TOTAL ...	3,600	...	3,600	128 13 8

GUNJARI.

1879-80 ...	3,500	...	3,500	111 0 0
1880-81 ...	3,500	...	3,500	37 0 0
1881-82 ...	3,500	...	3,500	20 1 6
1882-83 ...	3,500	...	3,500	45 15 11
1883-84 ...	3,500	...	3,500	45 4 11
1884-85 ...	3,500	...	3,500	53 6 4
TOTAL ...	21,000	...	21,000	312 12 8

UNDRIA-BAORIA.

1879-80 ...	3,100	...	3,100	23 4 3
1880-81 ...	3,100	10	3,090	32 14 0
1881-82 ...	3,100	8	3,092	18 0 0
1882-83 ...	3,100	...	3,100	34 12 8
1883-84 ...	3,100	...	3,100	39 13 11
1884-85 ...	3,100	...	3,100	49 1 8
TOTAL ...	18,600	18	18,582	197 14 6

BHOJWA-BAHERIA.

1879-80 ...	2,000	180	1,820	22 0 0
1880-81 ...	2,000	...	2,000	34 8 6
1881-82 ...	2,000	...	2,000	31 9 1
1882-83 ...	2,000	...	2,000	41 4 0
1883-84 ...	2,000	...	2,000	48 10 0
1884-85 ...	2,000	...	2,000	70 2 1
TOTAL ...	12,000	180	11,820	248 1 8

AJNAL.

1879-80 ...	1,500	...	1,500	57 13 9
1880-81 ...	1,500	...	1,500	37 4 0
1881-82 ...	1,500	...	1,500	26 4 0
1882-83 ...	1,500	8	1,492	20 7 6
1883-84 ...	1,500	...	1,500	27 4 11
1884-85 ...	1,500	...	1,500	29 4 2
TOTAL ...	9,000	8	8,992	198 6 4

BOWERGARH.

1874-75 ...	15,074	15,074	...	808 9 3
1875-76 ...	22,400	...	22,400	358 5 11
1876-77 ..	34,560	10	34,550	610 8 0
1877-78 ...	35,560	3,200	31,360	419 9 1
1878-79 ...	38,720	4,800	33,920	496 5 7
1879-80 ...	38,720	15,360	23,360	355 11 7
1880-81 ...	38,720	960	37,760	399 8 6
1881-82 ..	38,720	10,666	28,054	614 5 4
1882-83 ...	38,720	1,558	37,162	787 14 6
1883-84 ...	38,720	1,120	37,600	891 15 11
1884-85 ...	38,720	...	38,720	1,078 7 2
TOTAL ...	362,560	37,674	324,886	6,611 4 10

KHAMAPUR.

1875-76 ..	10,240	10,240	...	24 12 3
1876-77 ...	15,680	1,920	13,760	55 14 0 57 6 1
1877-78 ...	16,000	2,880	13,120	73 8 6
1878-79 ...	16,000	200	15,300	133 0 5
1879-80 ...	16,000	10,880	5,120	83 1 0
1880-81 ...	16,000	...	16,000	191 6 3
1881-82 ...	16,000	...	16,000	247 2 9
1882-83 ...	16,000	...	16,000	263 8 3
1883-84 ...	16,000	...	16,000	277 14 0
1884-85 ...	16,000	...	16,000	390 11 5
TOTAL ...	143,680	15,880	127,800	1,798 4 11

CHAORIA.

Year.	Attempted.	Failed.	Protected.	Cost.
	Acres.	Acres.	Acres.	Rs. a. p.
1880-81 ...	170	...	170	10 14 0
1881-82 ...	170	...	170	.....
1882-83 ...	170	...	170	.....
1883-84 ...	170	...	170	.....
1884-85 ...	170	...	170	13 12 0
TOTAL ...	850	...	850	24 10 0

BHIMARAM.

1872-73 ...	6,467	...	6,467	475 14 7
1873-74 ...	6,476	...	6,476	414 11 11
1874-75 ...	12,296	360	11,936	596 2 4
1875-76 ...	12,296	...	12,296	2,0[illegible]1 0 5
1876-77 ...	12,296	...	12,296	2,042 12 8
1877-78 ...	12,296	...	12,296	884 15 2
1878-79 ...	12,296	...	12,296	1,314 15 11
1879-80 ...	12,296	..	12,296	1,184 13 5
1880-81 ...	12,296	...	12,296	1,342 3 3
1881-82 ...	12,296	...	12,296	840 9 9
1882-83 ...	12,296	...	12,296	1,198 11 9
1883-84 ...	12,296	18	12,278	1,103 10 11
1884-85 ...	12,296	...	12,296	945 3 10
TOTAL ...	148,199	378	147,821	14,366 13 11

MIRKALLU.

1875-76 ...	5,268	...	5,268	553 7 3
1876-77 ...	8,479	...	8,479	1,431 9 1
1877-78 ...	8,479	...	8,479	1,191 15 9
1878-79 ...	8,479	...	8,479	1,090 9 5
1879-80 ...	8,479	10	8,469	909 4 7
1880-81 ...	8,479	...	8,479	897 1 11
1881-82 ...	8,479	...	8,479	801 10 8
1882-83 ...	8,479	320	8,159	1,419 6 4
1883-84 ...	8,479	...	8,479	1,230 10 4
1884-85 ...	8,479	...	8,479	1,198 13 11
TOTAL ...	81,579	330	81,249	10,724 0 3

TAROBA.

1874-75 ...	22,400	14,061	8,339	587 11 0
1875-76 ...	25,619	1,600	24,019	1,287 1 0
1876-77 ...	25,619	300	25,319	1,060 9 7
1877-78 ...	25,619	...	25,619	1,248 2 10
1878-79 ...	25,619	20	25,599	1,187 8 5
1879-80 ...	25,619	...	25,619	1,147 3 4
1880-81 ...	25,619	1,147	24,472	1,124 5 10
1881-82 ...	25,619	110	25,509	1,188 4 0
1882-83 ...	25,619	...	25,619	1,138 7 3
1883-84 ...	25,619	...	25,619	1,057 11 1
1884-85 ...	25,619	...	25,619	1,135 14 1
TOTAL ...	278,590	17,238	261,352	12,162 14 5

GARHAKOTA.

1874-75 ...	2,899	...	2,899	15 0 6
1875-76 ...	2,899	...	2,899	23 7 0
1876-77 ...	2,899	...	2,899	9 6 7
1877-78 ...	2,899	...	2,899	8 6 0
1878-79 ...	2,899	...	2,899	9 7 0
1879-80 ...	2,899	...	2,899	20 6 0
1880-81 ...	2,899	...	2,899	15 2 0
1881-82 ...	2,899	5	2,894	20 5 0
1882-83 ...	2,899	...	2,899	10 0 0
1883-84 ...	2,899	127	2,772	11 7 9
1884-85 ...	2,899	...	2,899	1 6 0
TOTAL ...	31,889	132	31,757	144 5 10

NARHAR.

1880-81 ...	39,040	...	39,040	328 8 6
1881-82 ...	39,040	2,000	37,040	410 12 10
1882-83 ...	39,040	...	39,040	461 14 3
1883-84 ...	39,040	...	39,040	482 6 0
1884-85 ...	39,040	...	39,040	510 4 5
TOTAL ...	195,200	2,000	193,200	2,188 14 0

KORAI.

Year.	Attempted.	Failed.	Protected.	Cost.
	Acres.	Acres.	Acres.	R. a. p.
1869-70	1,240	...	1,240	1,000 14 0
1870-71	1,240	...	1,240	421 13 0
1871-72	1,240	...	1,240	443 7 10
1872-73	31,210	...	31,210	605 14 2
1873-74	31,210	480	30,730	825 8 4
1874-75	31,210	...	31,210	768 2 2
1875-76	31,210	16,240	14,970	767 8 3
1876-77	31,210	...	31,210	781 3 11
1877-78	31,210	...	31,210	591 10 11
1878-79	31,210	400	30,810	452 15 7
1879-80	31,210	190	31,020	527 4 7
1880-81	31,210	...	31,210	461 3 0
1881-82	31,210	...	31,210	494 9 2
1882-83	31,210	...	31,210	532 15 4
1883-84	31,210	...	31,210	532 14 0
1884-85	31,210	...	31,210	579 13 5
TOTAL ...	409,450	17,310	392,140	9,787 13 8

NAGALWARI.

1877-78	5,120	...	5,120	431 3 6
1878-79	9,680	...	9,680	107 0 0
1879-80	9,680	155	9,525	192 14 11
1880-81	9,680	...	9,680	78 7 9
1881-82	9,680	...	9,680	101 13 1
1882-83	9,680	...	9,680	114 2 0
1883-84	9,680	...	9,680	126 1 0
1884-85	9,680	...	9,680	126 9 9
TOTAL ...	72,880	155	72,725	1,278 4 0

WEST PENCH PARASPANI.

1878-79	3,080	...	3,080	34 2 0
1879-80	8,240	90	8,150	63 2 0
1880-81	8,240	...	8,240	67 2 8
1881-82	8,240	...	8,240	86 5 4
1882-83	8,240	...	8,240	97 7 11
1883-84	8,240	...	8,240	107 4 0
1884-85	8,240	...	8,240	107 12 4
TOTAL ...	53,120	90	53,030	563 4 3

RANGIR.

1875-76	9,000	7,013	1,987	17 8 3
1876-77	1,987	...	1,987	10 4 11
1877-78	1,987	...	1,987	5 15 0
1878-79	1,987	...	1,987	9 10 0
1879-80	1,987	...	1,987	7 3 6
1880-81	1,987	...	1,987	13 3 6
1881-82	1,987	...	1,987	56 5 2
1882-83	1,987	90	1,997	40 5 0
1883-84	1,987	...	1,987	51 13 0
1884-85	1,987	...	1,987	38 6 0
TOTAL ...	26,883	7,103	19,780	250 10 4

KORAI RANGE SAKATA.

1879-80	10,020	...	10,020	125 8 0
1880-81	10,020	...	10,020	260 9 6
1881-82	10,020	...	10,020	156 3 10
1882-83	10,020	...	10,020	171 1 5
1883-84	10,020	...	10,020	124 9 3
1884-85	10,020	...	10,020	186 0 0
TOTAL ...	60,120	...	60,120	1,024 0 0

EAST PENCH.

1875-76	41,600	...	41,600	1,251 10 1
1876-77	42,560	...	42,560	889 6 3
1877-78	42,560	80	42,480	564 13 4
1878-79	42,560	1,600	40,960	432 3 10
1879-80	42,580	11,200	31,380	445 8 3
1880-81	42,580	...	42,580	554 9 5
1881-82	42,580	...	42,580	607 4 11
1882-83	42,580	...	42,580	616 14 5
1883-84	42,580	640	41,940	620 6 5
1884-85	42,580	...	42,580	690 11 4
TOTAL ...	424,760	13,520	411,240	6,613 8 3

RANIPURA.

Year.	Attempted.	Failed.	Protected.	Cost.
	Acres.	Acres.	Acres.	Rs. a. p.
1878-79	2,720	...	2,720	44 15 10
1879-80	2,720	...	2,720	51 15 0
1880-81	2,720	...	2,720	113 2 7
1881-82	2,720	...	2,720	38 0 0
1882-83	2,720	...	2,720	79 12 8
1883-84	2,720	...	2,720	64 6 7
1884-85	2,720	...	2,720	71 7 0
TOTAL ...	19,040	...	19,040	463 12 3

ERJHAR AND DHUGA.

1879-80	26,082	11,829	14,253	68 9 3
1880-81	26,082	2 8	25,864	241 8 6
1881-82	26,082	2,139	23,943	478 1 10
1882-83	26,082	8,300	17,782	531 12 9
1883-84	26,082	3,900	22,182	584 2 5
1884-85	26,482	500	25,582	462 11 9
TOTAL	156,402	26 886	129,606	2,366 14 6

HATHKO.

1874-75	746	...	746	7 9
1875-76	10,598	450	10,148	85 10 6
1876-77	10,598	4,896	5,702	386 2 5
1877-78	10,598	350	10,248	252 11 8
1878-79	10,598	2,900	7,698	220 1 5
1879-80	10,598	...	10,598	410 8 4
1880-81	10,598	...	10,598	276 11 4
1881-82	10,598	...	10,598	370 0 6
1882-83	10,598	...	10,598	232 14 4
1883-84	10,598	700	9,898	310 14 9
1884-85	10,598	...	10,598	246 3 6
TOTAL ...	106,726	9,296	97,430	2,799 7 9

TIGORA.

1879-80	...	...	...	2 0 0
1880-81	459	...	459	3 0 0
1881-82	459	...	459	2 8 0
1882-83	459	...	459	2 8 0
1883-84	459	...	459	7 3 0
1884-85	459	...	459	...
TOTAL ...	2,295	...	2,295	17 3 0

GOVARDHAN.

1874-75	6,720	...	6,720	528 2 10
1875-76	13,817	...	13,817	785 10 7
1876-77	13,817	285	13,532	620 12 6
1877-78	13,817	...	13,817	595 6 1
1878-79	13,817	...	13,817	536 12 0
1879-80	13,931	250	13,681	619 4 7
1880-81	13,931	...	13,931	471 14 8
1881-82	13,931	...	13,931	669 13 5
1882-83	13,931	...	13,931	617 11 2
1883-84	13,931	...	13,931	512 8 0
1884-85	13,931	...	13,931	546 13 3
TOTAL ...	145,574	535	145,039	6,577 13 1

JALANDHAR.

1880-81	2,885	...	2,885	15 6 0
1881-82	2,885	...	2,885	67 6 5
1882-83	2,885	...	2 885	116 13 10
1883-84	2,885	...	2,885	40 5 0
1884-85	2,885	213	2,672	65 9 0
TOTAL ...	14,425	213	14,212	305 8 3

PANDRATOLA.

1876-77	4,960	...	4,960	31 0 0
1877-78	4,960	20	4,940	...
1878-69	4,960	...	4,960	79 11 6
1879-80	4,960	...	4,960	72 10 0
1880-81	4,960	...	4,960	8 12 9
1881-82	4,960	640	4,320	78 14 7
1882-83	4,817	360	4,457	55 1 3
1883-84	4,817	4	4,813	68 1 5
1884-85	4,817	...	4,817	84 3 9
TOTAL ...	44,211	1,024	43,187	473 7 3

FIRE-PROTECTION IN THE CENTRAL PROVINCES.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of years under Protection.	Total Area. Attempted.	Total Area. Failed.	Total Area. Protected.	Cost.	Cost in pies, per acre. Attempted.	Cost in pies, per acre. Protected.
		Acres.	Acres.	Acres.	Rs. a. p.		
Hathibari ...	15	31,845	640	31,205	3,085 7 7	18·597	18·978
Kantranala ...	1	3,548	...	3,548	496 9 5	26·870	26 870
Banjar Valley ...	10	495,867	43,822	452 045	5,937 11 0	2·299	2·522
Motinala ...	10	16.586	339	16.247	541 15 3	6 243	6·404
Jagmandal ...	18	526,630	13,415	513,215	21,350 8 6	7 784	7·987
Chuharigogarh ...	18	40,667	1,548	39,119	5,046 4 7	23 825	24·767
Barela ...	13—5	35,765	156	35,609	2,084 5 1	11·196	11·215
Airi ...	7—6	12,900	140	12,760	225 6 6	3,355	3·391
Singrampur ...	14	91,770	618	91,152	2,521 8 10	5·275	5 311
Bijeragogarh ...	14	294,508	40	294.468	6,746 14 1	4·398	4·399
Lower Gour ...	4	15,034	...	15,034	496 12 9	6·344	6·344
Bajaborari ...	10	883,605	17,743	865,862	7,760 3 4	1·686	1·721
Saonligarh ...	10	637,691	27,091	610,600	5,112 4 7	1 539	1·607
Bori ...	20	569,400	5,680	563.720	16,614 13 2	5 602	5·659
Kalibhit ...	11	529,920	61,645	468,275	2,351 3 0	0 852	0·964
Punasa ...	13—10	716.560	144,499	572,061	8,247 14 7	2 210	2·768
Chandgarh ...	8	491.520	158,786	332.734	3,881 11 6	1·312	2·289
Khandwa ...	8	280,320	6,103	274,217	5,338 12 10	3·656	3·738
Bainpura ...	6	3,600	...	3,600	128 13 8	6·872	6·872
Gunjari ...	6	21,000	...	21,000	312 12 8	2 860	2 860
Undria Baoria ...	6	18.600	18	18.582	197 14 6	2·042	2 044
Bhojwa Baheria ...	6	12,000	180	11,820	248 1 8	3·97	3·97
Ajnal ...	6	9,000	8	8,992	198 6 4	4·232	4·236
Chaoria ...	5	850	...	8 0	24 10 10	5·348	5·348
Bowergarh ...	11—10	362.560	37,674	324,886	6,611 4 10	3·501	3·907
Khamapur ...	10—9	143,680	15,880	127,800	1,798 4 11	2 403	2·701
Bhimaram ...	13	148,199	378	147,821	14,366 13 11	18·613	18 904
Mirkallu ...	10	81,579	330	81.249	10,724 9 3	25·240	25·343
Taroba ...	11	278.590	17,238	261,352	12.162 14 5	8 368	8·935
G vardhan ...	11	145,574	535	145,039	6,577 13 1	8 675	8·707
Pipalkhota ...	4	5,120	...	5.120	20 15 0	0·785	0·785
Korai Block ...	16	409,450	17,310	392,140	9,787 13 8	4·590	4 792
„ Sakata ...	6	60,120	...	60.120	1.024 0 0	17·012	17·012
East Pench ...	10	424,760	13,520	411,240	6,613 8 3	2·989	3 088
Nagalwari ...	8	72,880	155	72,725	1,278 4 0	3·367	3 374
Paraspani ...	7	53,120	90	53,030	563 4 3	2 036	2·039
Narhar ...	5	195,200	2,000	193,200	2,188 14 0	2·153	2·175
Garhakota ...	11	31,889	132	31,757	144 5 10	0·869	0 873
Hatbko ...	11	106,726	9,296	97.430	2.799 7 9	5 036	5 517
Rangir ...	10	26.883	7,103	19,780	250 10 4	1·790	2·433
Ranipura ...	7	19 040	...	19,040	463 12 3	4·676	4·676
Tigora ...	5	2.295	...	2.295	17 3 0	1·438	1·438
Dhuga-Erjhar ...	6	156,492	26,886	129,606	2,366 14 6	2·903	3·505
Ja'ardihar ...	5	14,425	213	14,212	305 8 3	2·735	2·777
Pandratola ...	9	44.211	1,024	43,187	473 7 3	2·056	2·105
Total ...	...	8,521,979	632,235	7,889,744	1,79,490 14 2	4·044	4·37

APPENDIX C.

FINANCIAL RESULTS OF FOREST ADMINISTRATION IN THE CENTRAL PROVINCES FROM 1877-78 TO 1884-85.

Summary of Revenue in the whole Province.

Budget Heads.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	Total.	Per cent.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
I.—Timber and other Produce removed from the Forests by Government Agency:—										
a. Timber	59,785	4,20,804	1,77,679	61,742	2,97,120	57,777	61,736	64,858	9,01,451	11·91
b. Firewood and Charcoal	61	3,634	11,699	5,031	2,523	936	1,344	1,908	27,136	0·36
c. Bamboos	3,339	3,036	3,974	3,620	4,300	4,396	3,743	4,796	31,204	0·41
d. Sandalwood	...	...	...	2	...	...	...	23	25	...
e. Grass and other Minor Produce	1,901	1,481	7,243	5,761	6,284	11,954	13,513	12,566	60,703	0·80
									10,20,519	13·49
II.—Timber and other Produce removed from the Forests by Consumers or Purchasers:—	54,906	64,692	49,624	54,074	72,035	95,547	76,740	72,287	5,69,905	7·53
a. Timber	64,670	70,391	77,871	71,194	95,840	1,12,746	1,26,729	1,43,203	7,62,644	10·08
b. Firewood and Charcoal	79,542	1,21,505	99,291	94,755	89,693	79,786	83,968	78,707	7,27,247	9·61
c. Bamboos	47,427	50,053	51,353	55,711	73,250	80,265	79,663	88,313	5,26,035	6·95
d. Grazing and Fodder Grass	2,24,556	3,17,222	4,09,545	3,80,647	3,99,623	4,08,183	4,13,451	4,23,987	29,77,214	39·35
e. Other Minor Produce	71,718	75,930	60,770	85,288	1,01,307	92,539	93,489	1,01,382	6,82,423	9·02
									62,45,468	82·54
III.—Drift and Waif Wood and Confiscated Forest Produce	3,711	4,676	4,154	5,046	4,728	4,536	4,857	5,258	36,966	0·49
IV.—Revenue from Forests not managed by Government:—										
a. Duty on Foreign Timber and other Forest Produce	1	...	...	...	3	...	...	...	4	...
b. Revenue from Shared and Private Forests	...	60	...	10,192	8,460	9,728	11,822	9,884	50,146	0·66
									50,150	0·66
V.—Miscellaneous:—										
a. Fines and Forfeitures	1,363	526	2,403	3,241	3,238	4,494	6,066	4,396	25,727	0·34
b. Refunds	1,827	428	244	296	805	270	276	288	4,434	0·06
c. Other sources	39,153	18,424	50,874	13,539	13,675	14,490	17,372	15,346	1,82,873	2·42
									2,13,034	2·82
Total ...	6,83,910	8,52,862	10,06,724	8,50,139	11,72,884	9,77,647	9,94,769	10,27,202	75,66,137	100·00

Summary of Expenditure in the whole Province.

Budget Heads.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82	1882-83.	1883-84.	1884-85.	Total.	Per cent.
A.—Conservancy and Works.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
I.—Timber and other Produce removed from the Forests by Government Agency:—										
a. Timber	48,452	65,366	1,33,851	1,31,297	1,15,101	34,013	40,951	30,265	5,99,296	16·78
b. Firewood and Charcoal	14	3,895	10,076	4,509	1,025	149	186	901	20,955	0·59
c. Bamboos	2,639	2,391	906	1,592	1,374	1,014	1,698	1,769	13,383	0·37
d. Sandalwood	...	...	...	...	...	...	...	...	...	...
e. Grass and other Minor Produce	1,503	2,868	2,847	2,533	2,892	3,453	2,793	3,125	22,014	0·62
									6,55,648	18·36
II.—Timber and other Produce removed from the Forests by Consumers or Purchasers	90,791	1,12,278	1,30,547	1,46,065	1,53,104	1,57,413	1,63,976	1,71,031	11,25,205	31·51
III.—Drift and Waif Wood and Confiscated Forest Produce ...	...	...	17	...	...	177	...	...	194	0·01
IV.—Revenue from Forests not managed by Government:—										
a. Duty on Foreign Timber and other Forest Produce ...	...	...	...	...	...	...	...	...	...	...
b. Revenue from Shared and Private Forests	...	...	...	...	...	...	...	...	...	...
V.—Rent of Leased Forests and Payments to Shareholders in Forests managed by Government	...	1,209	1,119	251	251	251	251	251	3,583	0·10
VI.—Live-Stock, Stores, Tools and Plant:—										
a. Purchase of Cattle	70	1,957	2,121	313	1,001	463	19	662	6,606	0·19
b. Feed and Keep of Cattle	8,440	8,867	11,489	7,860	6,459	6,544	6,214	5,812	61,685	1·73
c. Purchase of Stores, Tools and Plant	401	8,910	29,913	2,195	2,168	1,089	1,508	5,752	51,936	1·45
									1,20,227	3·37
VII.—Communications and Buildings:—										
a. Roads and Bridges	773	2,070	1,847	480	848	533	2,553	2,934	12,068	0·34
b. Buildings	2,336	1,933	1,240	2,338	2,109	1,588	1,469	1,845	15,158	0·42
c. Other Works	1,748	1,431	636	2,114	1,889	849	671	1,103	10,441	0·29
									37,667	1·05
VIII.—Demarcation, Improvement, and Extension of Forests:—										
a. Demarcation	746	485	1,223	1,526	871	2,427	8,458	10,480	26,219	0·73
b. Compensation for Land and Rights	600	...	50	208	...	650	...	60,040	61,548	1·72
c. Surveys and Working-Plans	814	647	920	978	966	1,818	907	1,538	8,618	0·24
d. Sowing and Planting	3,529	2,636	3,661	3,968	4,662	632	255	406	19,749	0·55
e. Protection from Fire	10,253	10,863	11,319	13,456	13,307	13,816	16,806	17,585	1,07,405	3·01
f. Other Works	4,177	4,427	8,837	14,052	3,883	4,271	4,364	3,730	47,741	1·34
									2,71,280	7·69
IX.—Miscellaneous:—										
a. Refunds	165	690	2,835	789	674	807	711	1,574	8,245	0·23
b. Law Charges	3	...	17	25	391	15	73	187	711	0·02
c. Other Charges	947	3,106	2,906	3,837	4,468	3,513	3,189	3,138	25,104	0·70
									34,060	0·95
Total—A. Conservancy and Works ...	1,78,401	2,36,029	3,58,380	3,40,386	3,17,743	2,35,545	2,57,252	3,24,128	22,47,864	62·95

Summary of Expenditure in the whole Province.

Budget Heads.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	Total.	Per cent.
B.—Establishments.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.—Salaries.—										
a. Conservator	14,400	17,329	14,400	16.533	16,800	17,393	13,677	12,000	1,22,532	3·43
b. Superior Officers	58,092	70,737	77,910	67,710	88,161	83,537	89,586	85,607	6,21,340	17·40
c. Subordinate Forest and Depôt Establishments ...	33,407	35,479	34,729	36,142	37,179	37,023	38,467	36,472	2,88,898	8·09
d. Office Establishments	8,495	9,292	9,676	9,507	10,046	10,143	10,520	11,349	79,028	2·21
e. Deputation and Special Allowances	...	...	...	...	...	600	...	...	600	0·02
									11,12,398	31·15
II.—Travelling Allowances :—										
a. Conservator	1,349	1,536	1,824	1,505	1,206	1,603	1.297	1,505	11,825	0·33
b. Superior Officers	12,782	11,952	14,501	11,806	12,994	13,336	12,056	10,421	99,848	2·80
c. Subordinate Forest and Depôt Establishments	30	36	139	558	675	746	1,154	493	3,831	0·11
d. Office Establishments	1,155	780	776	795	673	744	801	990	6,614	0·19
									1,22,118	3·43
III.—Contingencies :—										
a. Stationery	550	328	178	169	280	197	151	159	2,012	0·06
b. Carriage of Tents and Records	4,943	4,330	4,504	4,383	4,587	4,110	3,970	4,984	35,811	1·00
c. Rents, Rates and Taxes	...	1,690	1,522	1,646	1,730	1,740	1,970	2,139	12,437	0·35
d. Pay of Police Guards	...	...	...	...	...	...	...	...	...	...
e. Official Postage	945	1,352	1,594	1,885	2,342	2,680	2,544	2,939	16,281	0·45
f. Sundries	3,129	2,845	2,440	2,488	2,697	2,851	2,612	2,635	21,697	0·61
									88,238	2·47
Total—B. Establishments ...	1,39,277	1,57,686	1,64,198	1,55,127	1,79,270	1,76,703	1,78,805	1,71,693	13,22,754	37·05
Grand Total of Expenditure ...	3,17,678	3,93,715	5,22,573	4,95,513	4,97,013	4,12,248	4,36,057	4,95,821	35,70,618	100·00

Summary of Revenue in the whole Province from 1877-78 to 1884-85.

Budget Heads.	Direction.	Balaghat.	Betul.	Bhandara.	Bilaspur.	Chanda.	Chhindwara.	Damoh.	Hoshangabad.	Jabalpur.	Mandla.	Mandla District.	Nagpur.	Narsinghpur.	Nimar.	Raipur.	Sambalpur.	Saugor.	Seoni.	Wardha.	Total.	Per cent.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
I.—Timber and other Produce removed from the Forests by Government Agency:—																						
a. Timber	223	275	2,229	2,805	...	6,15,511	111	...	40,090	1,020	1,81,879	1,754	...	...	24,314	50	...	4,165	17,971	9,060	9,01,417	11·91
b. Firewood and Charcoal ...	137	322	...	...	...	4	...	...	905	...	2,768	...	...	...	21,050	...	...	...	213	1,736	27,135	0·36
c. Bamboos	...	949	303	933	...	4,856	...	...	95	321	10,580	202	...	...	502	...	...	275	11,702	487	31,206	0·41
d. Sandalwood	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26	...	...	26	...
e. Grass and other Minor Produce ...	1,496	937	934	...	...	3,948	...	...	1,420	389	14,290	14,417	...	...	4,561	...	...	1,633	1,303	15,380	60,703	0·80
																					10,20,517	13·49
II.—Timber and other Produce removed from the Forests by Consumers or Purchasers:—	...	1,02,253	186	20,520	10,317	84,293	3,753	29,943	20,895	2,647	...	63,082	11,673	1,762	56,015	43,351	30,019	3,454	65,791	...	5,69,904	7·53
a. Timber	24	8,326	64,034	34,428	30,562	84,074	37,963	47,664	1,34,762	12,612	1,371	11,239	31,696	24,348	69,059	25,211	42,259	39,561	47,336	16,236	7,62,645	10·08
b. Firewood and Charcoal	...	22,123	44,696	1,21,527	11,464	77,634	16,744	26,540	42,893	26,948	2,121	10,350	25,050	22,155	22,304	1,20,589	2,477	74,442	29,055	28,135	7,27,249	9·61
c. Bamboos	319	11,107	34,633	10,865	19,236	1,23,416	24,901	8,343	74,914	9,303	2,453	15,488	7,049	10,698	63,755	3,165	17	17,116	89,299	62	8,26,039	6·95
d. Grazing and Fodder Grass ...	226	79,477	1,71,213	1,33,282	49,013	2,95,791	1,37,469	2,13,976	2,12,473	70,938	43,322	3,88,454	1,12,681	37,544	2,34,205	1,66,229	1,449	2,70,414	2,46,801	1,23,364	29,77,220	39·35
e. Other Minor Produce	12	29,516	55,365	25,955	13,267	96,978	21,361	93,727	50,475	23,623	4,846	52,880	15,131	7,684	16,491	62,242	3,761	7,640	29,443	10,621	6,82,418	9·02
																					62,45,475	82·54
III.—Drift and Waif Wood and Confiscated Forest Produce.	1	546	64	4,298	...	1,688	2,560	1,175	5,382	1,523	403	3,038	9,365	141	2,439	158	39	1,208	1,462	1,467	36,965	0·49
IV.—Revenue from Forests not managed by Government:—																						
a. Duty on Foreign Timber and other Forest Produce.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	4	...
b. Revenue from Shared and Private Forests.	...	...	...	33,661	16,495	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50,146	0·66
																					50,150	0·66
V.—Miscellaneous:—																						
a. Fines and Forfeitures	1	1,249	1,450	2,483	534	15	735	522	601	286	258	85	788	822	2,121	124	10,503	36	720	2,484	25,737	0·34
b. Refunds	1,149	133	223	...	50	586	66	110	125	233	418	...	102	4	887	2	...	172	106	67	4,432	0·06
c. Other sources	46,647	3,941	17,954	165	3,040	9,385	443	10,522	22,976	2,465	1,763	3,166	2,524	292	25,454	12,738	3,046	4,892	10,847	615	1,82,875	2·43
																					2,13,034	2·82
Total ...	50,225	2,61,154	3,98,296	3,90,910	1,63,967	12,97,179	2,46,006	4,82,422	6,07,897	1,62,208	2,68,472	5,64,105	2,16,649	1,05,459	5,23,161	4,33,859	93,570	4,87,489	5,72,043	2,06,724	75,66,141	100·00

Summary of Expenditure in the whole Province from 1877-78 to 1884-85.

Budget Heads.	Direction.	Balaghat.	Betul.	Bhandara.	Bilaspur.	Chanda.	Chhindwara.	Damoh.	Hoshangabad.	Jabalpur.	Mandla.	Mandla District.	Nagpur.	Narsinghpur.	Nimar.	Raipur.	Sambalpur.	Saugor.	Seoni.	Wardha.	Total.	Per cent.
A.—Conservancy and Works.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
I.—Timber and other Produce removed from the Forests by Government Agency:—																						
a. Timber	24	122	554	62	...	4,53,760	...	...	11,743	49	82,856	100	...	...	8,756	...	...	1,115	8,283	1,872	7,70,228	16 78
b. Firewood and Charcoal	...	...	...	...	...	...	...	...	56	...	1,239	...	...	...	19,044	...	...	...	14	597	20,949	0 89
c. Bamboos	8	285	293	...	...	2,179	...	...	231	66	6,000	...	...	...	190	...	...	247	3,788	96	13,383	0·37
d. Sandalwood	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
e. Grass and other Minor Produce ...	273	78	436	...	...	1,714	...	...	309	99	5,091	3,756	...	...	1,858	...	...	380	889	7,075	22,016	0 63
																					6,55,646	18 36
II.—Timber and other Produce removed from the Forests by Consumers or Purchasers.	3	52,065	80,397	43,512	23,513	99,706	66,821	86,492	1,03,268	29,919	3,679	78,645	54,760	25,166	1,04,074	55,106	27,067	98,252	76,809	36,952	11,25,988	31 51
III.—Drift and Waste Wood and Confiscated Forest Produce.	...	...	...	...	...	...	...	...	...	...	194	...	...	...	...	...	...	...	...	...	194	0·01
IV.—Revenue from Forests not managed by Government:—																						—
a. Duty on Foreign timber and other Forest Produce.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
b. Revenue from Shared and Private Forests.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
V.—Rent of Leased Forests and Payments to Shareholders in Forests managed by Government.	...	...	...	...	...	...	...	...	...	...	...	2,327	...	...	1,256	...	...	...	...	...	3,583	0 10
VI.—Live-Stock, Stores, Tools and Plant:—																						
a. Purchase of Cattle	...	...	...	...	...	2,050	...	54	...	...	2,091	...	...	...	702	...	...	...	370	1,339	6,606	0 19
b. Feed and Keep of Cattle	5,921	...	18	58	...	25,034	...	46	3,901	...	20,148	...	...	...	1,833	788	...	107	2,545	1,379	61,653	1 73
c. Purchase of Stores, Tools and Plant ...	3,926	23	1,299	180	...	30,591	603	14	1,611	954	4,310	34	668	...	4,261	...	8	901	1,061	1,465	51,937	1 45
																					1,20,226	3 37
VII.—Communications and Buildings:—																						
a. Roads and Bridges	...	...	2,525	...	270	576	...	...	2,576	...	5,295	...	...	...	777	...	...	641	3	16	12,003	0 34
b. Buildings	23	290	31	...	...	3,339	199	18	1,089	137	3,482	...	29	...	4,753	...	...	...	794	275	15,156	0·42
c. Other Works	...	...	119	...	...	25	...	...	19	...	8,507	...	...	...	1,563	...	...	...	...	149	10,141	0 29
																					37,655	1 05
VIII.—Demarcation, Improvement, and Extension of Forests:—																						
a. Demarcation	...	240	1,227	528	70	2,357	1,971	820	2,735	653	1,014	841	746	1,330	6,301	...	1,437	832	407	2,880	26,219	0 73
b. Compensation for Land and Rights	...	630	...	...	...	60,690	...	...	...	...	...	...	...	...	168	...	...	...	...	50	61,548	1 73
c. Surveys and Working-Plans ...	...	...	154	...	...	3,600	64	154	...	48	3,357	41	...	431	321	...	...	108	309	31	8,618	0 24
d. Sowing and Planting	2,855	122	128	...	...	...	67	191	43	6	155	...	...	...	14,423	...	215	115	108	1,230	19,751	0 55
e. Protection from Fire	1,050	390	6,573	8	...	30,995	369	27	15,341	2,665	13,696	...	...	...	17,757	...	...	3,365	13,152	2,002	1,07,410	3·01
f. Other Works	822	210	1,774	10	...	6,925	5	1,309	1,576	153	5,370	...	...	...	13,947	...	6	9,751	5,798	89	47,739	1 34
																					2,71,285	7 60
IX.—Miscellaneous:—																						
a. Refunds	500	163	1,086	303	89	206	14	321	71	485	15	1,709	519	261	542	663	13	211	166	345	6,344	0·23
b. Law Charges	...	5	5	...	...	1	2	...	10	...	373	...	3	...	278	...	...	19	13	...	710	0 02
c. Other Charges	12,392	...	89	...	...	714	...	15	382	1	1,608	8	4	...	1,992	...	...	92	223	686	25,406	0 70
																					34,060	0 95
Total—A. Conservancy and Works ...	31,703	54,648	77,295	44,681	23,972	7,53,582	70,032	89,164	1,44,585	35,235	1,68,539	87,461	56,729	27,188	2,01,721	56,457	28,796	1,16,145	1,14,826	59,529	22,47,867	62·95

Summary of Expenditure in the whole Province from 1877-78 to 1884-85.

Budget Heads.	Direction.	Balaghat.	Betul.	Bhandara	Bilaspur.	Chanda.	Chhindwara.	Damoh.	Hoshangabad.	Jabalpur.	Mandla.	Mandla District.	Nagpur.	Narsinghpur.	Nimar.	Raipur.	Sambalpur.	Saugor.	Seoni.	Wardha.	Total.	Per cent.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
B.—Establishments.																						
I.—Salaries—																						
a. Conservator ...	1,22,603		...	...		129	...		...	...	...	...	...		...	...	...	...			1,22,532	3·43
b. Superior Officers ...	38,786	2,700	54,348	10,950	...	82,598	10,173		63,503	6,750	97,183	...	37,630	...	73,561	13,487	..	48,063	62,215	20,197	6,21,342	17·40
c. Subordinate Forest and Depôt Establishments	8,981	6,406	19,214	1,325		43,083	1,329	5,230	31,324	10,818	39,976	4,722	4,932	686	40,262	5,326	...	14,493	40,312	10,456	2,88,894	8·09
d. Office Establishments ...	35,255	...	5,116	...		9,351	331	...	5,713	701	6,533		1,023	...	6,582	155	..	2,535	5,155	...	79,030	2·21
e. Deputation and Special Allowances	600		...	..			...								...	...	...	...	...	...	600	0·02
																					11,12,388	31·15
II.—Travelling Allowances.—																						
a. Conservator ...	11,825		...		...	...	..	...	..	...	...			..	...	...				...	11,825	0·33
b. Superior Officers ...	3,045	490	7,917	1,066	...	18,471	1,669		6,808	1,519	15,193		5,234	...	17,021	2,398		7,960	6,556	4,779	99,846	2·80
c. Subordinate Forest and Depôt Establishments	311	20	39		...	124	18	33	596	7	1,669	46	92	1	409	...	...	13	137	357	3,832	0·11
d. Office Establishments ...	[illegible]		623	...	...	330	66		561	33	903		202	..	810	15	...	325	737	...	6,611	0·19
																					1,22,114	3·43
III.—Contingencies.—																						
a. Stationery ...	214	...	82		...	127	13		259	44	544	...	5	...	384		.	70	218	49	2,011	0·06
b. Carriage of Tents and Records	4,9[illegible]	121	3,666	399		3,296	968	.	2,839	622	4,919	...	1,248	...	5,311	280	...	2,943	3,504	842	35,812	1·00
c. Rents, Rates and Taxes ...	378		1,879	..		132	.	..	656	..	2,166	..		...	15	1	...	1,700	2,109	...	12,136	0·35
d. Pay of Police Guards	—	..			...		...	...					...		.	...	..	...	..	...	...	...
e. Official Postage	2,439	321	1,112	611	..	2,807	235	31	1,335	194	848	181	878	22	1,479	94	110	2,579	698	107	16,280	0·45
f. Sundries	5[illegible]9	6	1,[illegible]8	38	.	1,706	350		1,944	441	3,475		530		2,112	342	..	1,800	1,808	228	21,700	0·61
																					88,241	2·47
Total—B. Establishments	2,40,322	40,664	94,432	14,397	.	1,62,154	15,152	5,303	1,15,578	21,128	1,73,709	4,919	51,775	709	1,48,246	22,078	110	82,381	1,23,649	37,018	13,22,753	37·06
Grand Total of Expenditure ...	2,75,064	64,312	1,71,727	59,049	23,973	9,15,736	85,184	94,767	2,60,463	56,363	3,42,248	92,380	1,08,504	27,997	3,52,967	78,535	28,906	1,98,526	2,38,475	95,546	35,70,620	100·00

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